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NEWSLETTER IN CENTER FOLD

U.S. DEPARTMENT OF COMMERCE
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UNITED STATES DEPARTMENT OF COMMERCE

Charles Sawyer, Secretary

OFFICE OF TECHNICAL SERVICES

John C. Green, Director

February 1951

GEOPHYSICAL STUDIES in the ANTARCTIC

The supporting role of science in establishing territorial claims while adding to man's knowledge of his planet is given due play in a new technical book published by Stanford Research Institute, Stanford, California. "Geophysical Studies in the Antarctic" by Dr. Thomas C. Poulter, Senior scientist and second-in-command of the Second Byrd Antarctic Expedition and now associate director of Stanford Research Institute, represents several years of work in assembling and editing the great mass of data collected during nearly thirteen months spent at a base camp and in field work on the floating shelf ice of the Ross Sea, Bay of Whales.

These geophysical studies supplied (1) the first real proof of the existence of Roosevelt Island, (2) the first real basis for determining the origin of the Ross shelf ice, as well as the origin of many of its prominent features such as Discovery Inlet, Lindbergh Inlet, Kainan Bay, the Bay of Whales, the parallel cracks and crevassed or pressure areas, (3) the first information as to which ice areas were grounded and which floating and their thickness, and (4) a contour map of 2,000 square miles of ocean floor under the ice.

Two years of preparation went into the comprehensive scientific program of the expedition prior to its departure for the Antarctic in October, 1933. Dr. Poulter and his staff of more than twenty scientists and technicians, developed equipment and techniques new to polar exploration and research, including use of the geophysical seismograph, to carry out work in twenty-one fields of scientific study. Advantage was taken of the unusual opportunity to make many fundamental studies of sound absorption and transmission and of the transmission of seismic energy and multiple reflections. In their work the Poulter party traveled 2,000 miles on skis and an equal distance by plane. Continental ice thicknesses of more than 2,000 feet and floating ice up to 1,500 were measured.

The new publication extends and includes material previously reported. It deals primarily with phases of the expedition's scientific program that were related in one way or another to geophysics and its applications. Among the sections covered are Sound Absorption and Transmission Phenomena in the Antarctic, Seismic Equipment and Field Procedure, Methods of Determining Depth and of Identifying Multiple Reflections and Their Use in Determining Dip, Physical Structure of the Shelf Ice, Snow Tremors and Snow Geysers, Tide in the Bay of Whales, Ice Movement, Surface Elevation, Tide Cracks, and Water Current.

Many of the records obtained in the Antarctic have unique characteristics, some of which have never before been made and identified with such clarity. As a result, they are of considerable assistance in the proper interpretation of certain features obtained in commercial geophysical work. Several are reproduced in the book.

A special supplement is "Seismic Measurements on the Taku Glacier," a report on Dr. Poulter's work in the Juneau Ice Field during the summer of 1949. Under the sponsorship of the American Geographical Society, Dr. Poulter's field team of Stanford Research Institute geophysicists were able to obtain the first successful and extensive seismic records on glacier ice thickness by employing improved techniques for "air shooting" charges, which were indicated by and developed from the Antarctic experience.

Preparation of "Geophysical Studies in the Antarctic" was sponsored by the Office of Naval Research. The volume, which is being sold by Stanford Research Institute at the publishing cost of $4.00, is a valuable reference for students and professionals concerned with geophysics, seismology, physical geography, physical oceanography, meteorology, and cartography.

Prepared by:
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Director of Public Relations
Stanford Research Institute
Stanford, California

APPAREL

DEVELOPMENT OF CORD CX-856/A, by William L. Moore. U. S. Air Materiel Command. Engineering Division. Aero-Medical Laboratory, Wright Field, Dayton, Ohio. Oct 1948. 14p photos, tables Mi $1.75, Ph $3.75. PB 101992

1. Helmets, Flying - Cords 2. CX-856/A (Cord for flying helmets) 3. AAF TSEAA MR 666-17.

SHOE, FLYING, INTERMEDIATE (SEALED INSULATION), by Thorlough Smith. U. S. Air Materiel Command. Engineering Division. Aero-Medical Laboratory, Wright-Patterson Air Force Base, Dayton, Ohio. Dec 1949. 19p photos Mi $1.75, Ph $2.50. PB 102422

1. Shoes, Flying 2. AAF TSEAA MR 666-15A.

THERMAL CHARACTERISTICS OF MULTI-LAYER COMBINATIONS OF ALUMINUM FOIL AND NYLON AND COTTON FABRIC IN CLOTHING, by Franz G. Rinecker. U. S. Air Materiel Command. Engineering Division. Aero-Medical Laboratory Wright-Patterson Air Force Base, Dayton, Ohio. Aug 1950. 5p tables Mi $1.25, Ph $1.25. PB 102423

This material designed for use as the primary insulator in cold weather clothing was submitted by the Alumet Co., Boston, Mass. Factual data, conclusions and recommendations are given. Tables attached. AAF TSEAA MR 666-23H.

CHEMICAL AND ALLIED PRODUCTS

Dyes

DEVELOPMENT OF NEW DYES AND COLOR APPLICATION PROCESSES IN GERMANY AND ITALY DURING WORLD WAR II, AND DER ZELLWOLLE-LEHRSPINNEREI G.M.B.H., ITS POTENTIAL VALUE TO DYESTUFF AND TEXTILE CHEMICAL AUXILIARY DEVELOPMENT. REPORTED by H. A. Dahlen. U. S. Army. European Theater of Operations. Office of the Quartermaster. Technical Intelligence Branch. Procurement Division. Oct 1945. 469p tables Mi $9.00, Ph $58.75. PB 101462

1. Dyes and dyeing - Germany 2. Dyes and dyeing - Italy 3. Shoddy, Uncarbonized - Dyes and dyeing - Germany 4. Nylon - Dyes and dyeing - Germany 5. Polyamides - Dyeing - Germany 6. Dyes, Azo - Manufacture - Germany 7. Dyes, Astrazon - Manufacture - Germany 8. Dyes, Indanthrene - Manufacture - Germany 9. Dyes, Vat - Manufacture - Germany 10. I. G. Farbenindustrie A. G. 11. Montecatini - Societa Generale per l'Industria Mineraria e Chemica 12. Zellwolle Lehrspinnerei G.m.b.H., Denkendorf, Ger. 13. Indanthrene khaki GR powder fine for dyeing (Trade name) 14. Indanthrene brilliant pink BL (Trade name) 15. Benzo fast copper blue F3GL (Trade name) 16. Benzo fast copper bordeaux BL (Trade name) 17. Benzo fast copper brown TL (Trade name) 18. Benzo fast copper navy blue BL (Trade name) 19. Benzo fast copper navy blue 3RL (Trade name) 20. Benzo fast copper red 2GL (Trade name) 21.Benzo fast copper rubine RL (Trade name) 22. Benzo fast copper violet F 3BL (Trade name) 23. Benzo fast red BB (Trade name) 24. Sirius supra brown 5G (Trade name) 25. Sirius supra brown 3RL extra conc (Trade name) 26. Sirius supra yellow FRRL (Trade name) 27. Sirius supra green BTL (Trade name) 28. Sirius supra orange RRL (Trade name) 29. Sirius red F3B (Trade name) 30. Diamine orange GR (Trade name) 31. Diazo bordeaux 7BL (Trade name) 32. Diazo brilliant scarlet 3BL extra (Trade name) 33. Diazo golden yellow G extra (Trade name) 34. Diazo fast scarlet FBL (Trade name) 35. Rapidogen golden yellow IGL (Trade name) 36. Diamond gray GL (Trade name) 37. Acid anthracene brown TBL (Trade name) 38. Supranol brilliant red 6B (Trade name) 39. Brilliant wool blue FFRL extra (Trade name) 40. Chromoxane brilliant violet BR (Trade name) 41. Chromoxane brilliant violet RE (Trade name) 42. Benzo fast chrome red G (Trade name) 43. Nitrazol black M (Trade name) 44. Autazol chrome black BA (Trade name) 45. Autazol chrome navy blue BRA (Trade name) 46. Igenal brown IRB (Trade name) 47. Heliogen green B (Trade name) 48. Sirius light green FFGL (Trade name) 49. Astrazon yellow 5G (Trade name) 50. Astrazon yellow 3G (Trade name) 51. Astrazon orange G (Trade name) 52. Astrazon orange R (Trade name) 53. Astrazon pink FG (Trade name) 54. Astrazon red 6B (Trade name) 55. Astrazon blue B (Trade name) 56. Astrazon blue G (Trade name) 57. Astrazon violet R (Trade name) 58. Indanthrene bordeaux RR (Trade name) 59. Indanthrene printing blue FG (Trade name) 60. Indanthrene navy blue RB (Trade name) 61. Indanthrene blue CLB (Trade name) 62. Indanthrene blue green 3B (Trade name) 63. Indanthrene brown NGR (Trade name) 64. Indanthrene olive G (Trade name) 65. Indanthrene grey 3G suprafix (Trade name) 66. Algol pure blue B (Trade name) 67. Anthrasol golden orange IGG (Trade name) 68. Anthrasol 04 G (Trade name) 69. Anthrasol blue IGC (Trade name) 70. Anthrasol printing yellow 13G (Trade name) 71. Anthrasol yellow IG (Trade name) 72. Anthrasol yellow 12G (Trade name) 73. Helindon red FR (Trade name) 74. Benzo fast copper brown BRL (Trade name) 75. Benzo fast copper yellow GRL (Trade name) 76. Benzo fast chrome orange R (Trade name) 77. Benzo fast chrome blue FG (Trade name) 78. Alizarine chrome blue FFG (Trade name) 79. Chrome brilliant blue BL (Trade name) 80. Chromoxane brilliant red 3BD extra (Trade name) 81. Supranol yellow 4G (Trade name) 82. Autazol chrome black R (Trade name) 83. Autazol chrome black VA (Trade name) 84. Autazol chrome black GR (Trade name) 85. Hansa yellow GE (Trade name) 86. Lithol fast scarlet RB (Trade name) 87. Lithol fast scarlet RD (Trade name) 88. Pigment lake red LP (Trade name) 89. Lake red toner LCLL (Trade name) 90. Spinning khaki GV (Trade name) 91. Reflex violet A (Trade name) 92. Reflex blue AGG (Trade name) 93. Erganil grey GG (Trade name) 94. Dianil yellow 3GW (Trade name) 95. Dianil yellow GW (Trade name) 96. Celliton fast yellow 3G (Trade name) 97. Celliton fast yellow G (Trade name) 98. Celliton fast yellow 5R (Trade name) 99. Celliton fast brown 3R (Trade name) 100. Celliton fast red BB (Trade name) 101. Celliton fast pink RF (Trade name) 102. Celliton fast blue FFG (Trade name) 103. Celliton fast blue FR conc (Trade name) 104. Celliton fast green 3B (Trade name) 105. Anthrasol salt NO (Trade name) 106. Immedialsol yellow G (Trade name)

107. Immedialsol brown BRD (Trade name) 108. Immedialsol brown T (Trade name) 109. Immedialsol violet B (Trade name) 110. Immedialsol blue FFR (Trade name) 111. Immedialsol blue 5G (Trade name) 112. Immedialsol green FG (Trade name) 113. Naphthol AS (Trade name) 114. BIOS M 20.

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Plastics and Plasticizers

GELATON DGH (DIGLYCOL-DI-ISOHEPTYLATE) AND 2-ETHYLHEXANDIOL (1.3) USED AS PLASTICIZERS IN THE PROCESSING OF POLYVINYL-ACETATES FOR SAFETY GLASS. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. 1939-1942. 38f (Text in German) Mi $2.25, Enl Pr $6.25.

PB 102060

1. Gelaton III (Trade name) 2. Gelaton DGH (Trade name) 3. 2-Ethyl hexanediol-1,3 - Germany 4. Polyvinyl acetate - Plasticizers - Germany 5. Glass, Safety - Plasticizers - Germany 6. Kuteko (Kunstoff-Technische Kommission) 7. Micro BIOS FD 1744/48, Frames 1-36.

Abstract available as PB 102060s. 2p. Mi $1.25, Ph $1.25.

Chemical Engineering and Equipment

CAPACITY, EXTENSION, PROCESSING, ETC. RELATING TO THE GLYCERINE D, ETHYLENE, AND ETHYLENE OXIDE PLANTS. I. G. Farbenindustrie A. G., Schkopau, Ger. 1939-1944. 394f drawings, graphs (Text in German) Mi $9.00, Enl Pr $52.50.

PB 102146

1. Ethylene - Production - Germany 2. Ethylene oxide - Production - Germany 3. Diethylene glycol - Production - Germany 4. Micro BIOS FD 2627/47, Frames 1-388.

Abstract available as PB 102146s. 2p. Mi $1.25, Ph $1.25. Contains report and papers read at a conference on ethylene at Ludwigshafen Oct. 10, 1941.

Miscellaneous Chemicals

BERICHT ÜBER UNTERSUCHUNGEN ZUR VERWERTUNG DES SCHWEFELS AUS CALCIUMSULFAT (REPORT ON THE PRODUCTION OF SULFUR FROM CALCIUM SULPHATE), by Dr. Kaysser. I. G. Farbenindustrie A. G., Frankfort, Ger. Mar 1940. 45f drawings, tables (Text in German) Mi $2.50, Enl Pr $7.50.

PB 102227

1. Sulfur - Production - Germany 2. Calcium sulfate - Reduction - Germany 3. Micro BIOS FD 5034/47, Frames 1941. 4. BIOS FR 335 LD.

Abstract available as PB 102227s. 1p. Mi $1.25, Ph $1.25. Listed in BIOS FR 335 p. 196. Report 1788

DESCRIPTION OF THE ETHYLENE PLANT AND PROCESS. I. G. Farbenindustrie A. G., Schkopau, Ger. 1938-1941. 36f tables (Text in German) Mi $2.25, Enl Pr $6.25. PB 102139

1. Ethylene - Production - Germany 2. I. G. Farbenindustrie A. G. - Plants - Layouts 3. Kybol (Trade name) 4. Micro BIOS FD 2611/47, Frames 1-35.

Abstract available as PB 102139s. 2p. Mi $1.25, Ph $1.25. For other papers from this plant see PB 102140-102143, 110397.

DETAILS OF PRODUCTION AND CONSUMPTION OF "NULLGAS", AND RELATED SUBJECTS. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. 1940-1945. 131f drawings (Text in German) Mi $5.50, Enl Pr $18.75. PB 101942

1. Nullgas (Trade name) 2. Hydrogen - Production - Germany 3. Hydrogen - Purification - Germany 4. Acetylene - Purification - Germany 5. Micro BIOS FD 1331/49, Frames 1-122.

Abstract available as PB 101942s. 1p. Mi $1.25, Ph $1.25.

DIRECTIVES AND WORKING INSTRUCTIONS FOR DESMODUR R (TRIAMINOTRIPHENYLMETHANE). PROCESSING DATA FOR DESMODUR R,H,T AND TH. I. G. Farbenindustrie A. G., Leverkusen, Ger. Oct 1943. 11f (Text in German) Mi $1.75, Enl Pr $3.75. PB 102064

1. Desmodur H (Trade name) 2. Desmodur R (Trade name) 3. Desmodur T (Trade name) 4. Desmodur TH (Trade name) 5. Isocyanates - Preparation - Germany 6. Micro BIOS FD 3223/47, Frames 1-7.

Abstract available as PB 102064s. 2p. Mi $1.25, Ph $1.25.

DIVINYL ETHER: MEMORANDA, FERRO-PRINTS, NOTES. I. G. Farbenindustrie A. G., Schkopau, Ger. 1940-1944. 31f drawings, graphs (Text in German) Mi $2.25, Enl Pr $6.25. PB 102164

1. Ethers, Divinyl - Production - Germany 2. Visol (Trade name) 3. Acrylic acid - Esters - Thermodynamics - Germany 4. Micro BIOS FD 2655/47, Frames 1-8.

Abstract available as PB 102164s. 1p. Mi $1.25, Ph $1.25.

DRAWINGS AND FLOW DIAGRAMS OF PLANT CONNECTED WITH THE PRODUCTION OF POLYVINYL ACETATE. Wacker, Alexander, Gesellschaft für Elektrochemische Industrie G.m.b.H., Burghausen, Ger. 1927-1945. 477f drawings, diagrs (Text in German) Mi $9.00, Enl Pr $62.50. PB 101918

1. Polyvinyl acetate - Production - Germany 2. Micro BIOS FD 259/50, Frames 1-63+218.

Abstract available as PB 101918s. 1p. Mi $1.25, Ph $1.25.

FORMULAE FOR AROMATIC SYNTHETIC PRODUCTS IONONE, IRALDEIN AND BOURBONAL. Haarmann & Reimer G.m.b.H., Holzminden, Ger. 1946. 9f (Text in German) Mi $1.25, Enl Pr $2.50. PB 102214

1. Ionones - Germany 2. Bourbonal - Preparation - Germany 3. Iraldein (Trade name) 4. Iraldein T (Trade name) 5. Micro BIOS FD 311/48, Frames 1-7.

Abstract available as PB 102214s. 1p. Mi $1.25, Ph $1.25. Includes yields for each product in 1938.

GASKATALYSCHE DARSTELLUNG VON PERCHLORÄTHYLEN-TETRA CHLORÄTHYLEN AUS CHLORIERTEN ÄTHANEN, INSBESONDERS AUS TETRACHLORÄTHAN UND PENTACHLORÄTHAN IN GEGENWART VON AKTIVER KOHLE (PRODUCTION OF PERCHLORETHYLENE), by Dr. Ostermayer. I. G. Farbenindustrie A. G., Schkopau, Ger. Oct 1939. 31f drawings, graphs (Text in German) Mi $2.25, Enl Pr $6.25. PB 102166

1. Ethylene, Tetrachloro - Production - Germany 2. Micro BIOS FD 2663/47, Frames 1-30.

Abstract available as PB 102166s. 1p. Mi $1.25, Ph $1.25. See also PB 102147 for work on the catalyst.

KONTINUIERLICHE WASSER DAMPF DISTILLATION VON TETRACHLORÄTHAN IN SCHKOPAU (CONTINUOUS DISTILLATION OF TETRACHLORETHANE AT SCHKOPAU), by Dr. Ostermayer. I.G. Farbenindustrie A. G., Schkopau, Ger. Jun 1941. 7f drawings (Text in German) Mi $1.25, Enl Pr $2.50. PB 102165

1. Ethane, Tetrachloro - Production - Germany 2. Ethane, Tetrachloro - Production - Equipment - Germany 3. Micro BIOS FD 2662/47, Frames 1-6.

Abstract available as PB 102165s. 1p. Mi $1.25, Ph $1.25. Laboratory report 6/41.

METHODS AND CALCULATIONS FOR ATTAINING DEFINITE DISTRIBUTION OF THICKNESS OF LAYERS ON REFLECTORS, by Dr. Grünewald. Germany. Heeresversuchsstelle, Peenemünde, Ger. Apr 1943. 29f drawings, graphs Mi $2.00, Enl Pr $5.00. PB 102069

1. Reflectors - Coatings - Germany 2. Micro BIOS FD 4688/47, Frames 1-28.

Abstract available as PB 102069s. 1p. Mi $1.25, Ph $1.25. Translation of his Erzielung bestimmter schichtdickenverteilungen auf spiegeln, 2. bericht.

MONTHLY PRODUCTION AND LABORATORY REPORTS OF THE VINYL CHLORIDE PLANT. I. G. Farbenindustrie A. G., Schkopau, Ger. 1938-1944. 180f tables (Text in German) Mi $6.50, Enl Pr $23.75. PB 102162

1. Vinyl chloride - Production - Germany 2. Ethylene, Dichloro - Production - Germany 3. Micro BIOS FD 2646/47, Frames 1-178.

Abstract available as PB 102162s. 2p. Mi $1.25, Ph $1.25.

MONTHLY REPORTS OF THE TETRACHLORETHANE PLANT. I. G. Farbenindustrie A. G., Schkopau, Ger. Aug 1939-Dec 1944. 99f drawings (Text in German) Mi $4.25, Enl Pr $13.75. PB 102147

1. Ethane, Tetrachloro - Production - Germany 2. Acetylene - Chlorination - Germany 3. Micro BIOS FD 2661/47, Frames 1-97.

Abstract available as PB 102147s. 2p. Mi $1.25, Ph $1.25.

NAPALM MANUFACTURE, by R. J. DeGray. U. S. Chemical Warfare Service. Nov 1943. 65p diagr, graphs Mi $3.00, Ph $8.75. PB 102176

This report described one method with references to several other good methods for the production of Napalm. It is realized that Napalm will be manufactured in existing plants, each with certain equip-

ment already available. This condition places limitations on adherence to the exact letter of this directive. It is however of prime importance to conform to the basic principles, and to maintain a balance between the particular equipment, process and raw materials available.

PRODUCTION, COST, USES, SALE, ETC. OF ETHYLENE CHLORIDE. I. G. Farbenindustrie A. G., Schkopau, Ger. 1937-1944. 55f drawings, tables (Text in German) Mi $2.75, Enl Pr $8.75. PB 102143

1. Ethylene - Production - Germany 2. Micro BIOS FD 2625/47, Frames 1-53.

Abstract available as PB 102143s. 1p. Mi $1.25, Ph $1.25. For other papers from the ethylene plant see PB 102139-102142, 110397.

PRODUCTION PROGRAMMES, EXTENSIONS, ETC. IN THE MANUFACTURE OF TRICHLORETHYLENE, AS-DICHLORETHYLENE, AND TETRACHLORETHANE. I. G. Farbenindustrie A. G., Schkopau, Ger. 1939-1944. 162f (Text in German) Mi $6.25, Enl Pr $22.50. PB 102211

1. Ethane, Tetrachloro - Production - Germany 2. Ethane, Trichloro - Production - Germany 3. Ethane, Dichloro - Production - Germany 4. Micro BIOS FD 2665/47, Frames 1-157.

Abstract available as PB 102211s. 1p. Mi $1.25, Ph $1.25.

PURIFICATION OF ETHYLENE. I. G. Farbenindustrie A. G. 1939-1945. 78f drawings, graphs, tables (Text in German) Mi $3.50, Enl Pr $11.25. PB 102141

1. Ethylene - Purification - Germany 2. Ethylene - Production - Germany 3. Butadiene - Production - Germany 4. Micro BIOS FD 2613/47, Frames 1-75.

Abstract available as PB 102141s. 2p. Mi $1.25, Ph $1.25. For other papers from the ethylene plant see PB 102139-102140, 102142-102143, 110397.

REFERENCE LIST OF PUBLICATIONS ON DOUBLE CHLORIDES, FOR THE REPLACEMENT OF SUBLIMATE AS A CATALYST IN THE PRODUCTION OF VINYLCHLORIDE, by Dr. Haufe. I. G. Farbenindustrie A. G., Schkopau, Ger. 1944. 303f (Text in German) Mi $9.00, Enl Pr $41.25. PB 102152

1. Chlorides, Double - Bibliography - Germany 2. Micro BIOS FD 2091/47, Frames 1-298.

Abstract available as PB 102152s. 1p. Mi $1.25, Ph $1.25.

VEREINIGTE FLUSSPATGRUBEN G.M.B.H., AT STULLN, LOWER BAVARIA, BY H. L. GREEN. BRITISH INTELLIGENCE OBJECTIVES SUBCOMMITTEE. BIOS TRIP NO. 917. 1945. 8f photo, diagr Mi $1.25, Enl Pr $2.50. PB 102207

1. Fluorides - Production - Germany 2. Hydrofluoric acid - Production - Germany 3. Vereinigte Flusspatgruben G.m.b.H., Stulln, Ger. 4. BIOS FR 72 5. Micro BIOS FD 3012/48, Frames 1-8.

English abstract included.

DETERIORATION STUDIES

MOTHPROOFING AGENTS, A LITERATURE AND PATENT SURVEY, PREPARED by Francis D. Horigan and Cary R. Sage. U. S. Office of the Quartermaster General, Military Planning Division. Research and Development Laboratories. Technical Library. Oct 1950. 46p Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $1.25. PB 102173

The present bibliography is essentially a literature and patent survey of mothproofing agents utilized and developed during 1940-49 with especial reference to other pertinent phases such as: knowledge of the moth's life cycle, food requirements of the moth, substantivity of agents and fastness to light, washing and milling. The compilation is arranged in chronological order. The intra-annual breakdown is as follows: (1) the literature references are arranged alphabetically according to title and precede the patent citations; (2) the patent references are arranged alphabetically according to country and numerically according to date of publication or complete acceptance date. Worthy of comment is the fact that the Geigy Co. A.-G. and the American Cyanamid Co. have control of a large percentage of the mothproofing patents. It is to be pointed out that during the 1940-49 period more than 500 patents were issued for mothproofing in the U. S. alone. However very few of them are being marketed. Only those patents which conform to the more accepted mothproofing standards have been chosen for inclusion into this bibliography. A "name" index, comprising the names of authors and inventors, together with a numerical "patent" index has been appended. QMC TL BS 15.

ELECTRICAL MACHINERY, EQUIPMENT AND SUPPLIES

Communication Equipment

GRAPHICAL SOLUTION OF THE EQUATION OF MOTION OF AN ION IN A TIME-VARYING ELECTRIC FIELD, by P. A. Redhead. National Research Council of Canada. Radio and Electrical Engineering Division. Oct 1950. 8p fold. graphs Mi $1.25, Enl Pr $1.25. Also available from National Research Council of Canada, Ottawa, Canada. $.10. PB 102127

A graphical method of computing the kinematic parameters of a charged particle moving in a time-varying electric field is described. Two sets of universal curves are presented from which the above parameters may be found without recourse to any geometric constructions. NRCC 2234. NRCC ERA 188.

Electronics

ADJUSTABLE TEMPERATURE-COEFFICIENT CAPACITOR, by John A. Connor. U. S. Naval Research Laboratory. Jun 1950. 14p. Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. Mimeo: $.50. PB 102005

Theoretical and practical concepts are derived to show how a capacitor can be made which will be adjustable in its temperature coefficient of capacitance and yet maintain a constant equivalent capacitance. A highly reliable capacitor of this kind can be designed with variable air-dielectric capacitors pro-

viding the means of achieving adjustability. The conditions for maintaining a constant capacitance are presented and the effective temperature coefficient of capacitance of four capacitors in series-parallel is derived. This derivation is related to the achievement of a practical capacitor with an adjustable temperature coefficient. NRL R 3689.

BROAD BAND UNIDIRECTIONAL ANTENNA 50 - 170 MCS, by Richard Guenther and Victor J. Colaguori. U. S. Signal Corps Engineering Laboratories, Fort Monmouth, N. J. Aug 1950. 27p photos, diagrs, drawings, graphs Mi $2.00, Ph $3.75. PB 101999

The bandwidth limitations of a dipole array have been studied under certain assumptions as to pattern and impedance requirements. Using large diameter cylindrical radiators and flat reflectors, a frequency range of about 3.3:1 has been found as the upper limit. The pattern is unidirectional with minor lobes 10 db or more below the radiation in the desired direction, and the gain over a half wave dipole varies between 6 db and 10 db within the frequency band. With a 65' RG-8/U Cable in series with the complete antenna system, the VSWR at the input of the cable is less than or equal to 3:1. In those figures the balancing transformer has been included. For the purpose of greatest simplicity, no compensation circuits have been used. SIG Corps Proj no. 8241. Dept. of the Army Proj. no. 3-24-06-046. SCEL TM M-1317.

FINAL REPORT, PART I, CONTRACT NUMBER N6-ORI-100. Ultrasonic Corporation, Cambridge, Mass. Jun 1948. 27p Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. Mimeo: $.75. PB 102030

1. Fog - Dissipation 2. Sound - Propagation - Atmospheric effects.

Task order I. Project designation number NR-063-023. For final report, part IV see PB 102031.

INVESTIGATION OF PERCEPTUAL FACTORS INVOLVED IN THE INTERPRETATION OF PPI SCOPE PRESENTATIONS: LITERATURE AND INTRODUCTION, by Siegfried J. Gerathewohl. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. Sep 1950. 18p photos, drawings Mi $1.75, Ph $2.50. PB 101955

This is a survey of literature dealing with (1) tests used for the selection of radar operators, (2) psychological experiments in radar, and (3) perceptual problems of PPI-scope interpretation. The contribution of Gestalt psychology to the problem of target identification is discussed. The experimental approach to the use of the Supersonic Trainer is outlined. Bibliography and photographs attached. Former project no. :21-02-149. AAF SAM Project 21-24-009 Report 1.

PREISARBEITEN ZU DER AUFGABE AUS DEM GEBIETE DES FUNKWESENS (FREQUENCY AND PHASE MODULATION HAVING REGARD TO THE SPECIAL CONDITIONS REQUISITE FOR USE IN AIRCRAFT). Lilienthal Gesellschaft für Luftfahrtforschung, Berlin. 1942. 290f photos, diagrs, graphs (Text in German and English) Mi $9.00, Enl Pr $38.75. PB 102076

1. Frequency modulation - Germany 2. LG BS 12 3. Micro BIOS HEC 11672 4. Micro BIOS FD 2489/46 Frames 970-1068+188.

English translation and abstract included. Abstract available as PB 102076s. 2p. Mi $1.25, Ph $1.25.

PROGRESS REPORT FOR APRIL - JUNE, 1950. National Research Council of Canada. Radio and Electrical Engineering Division. Jul 1950. 39p photos, drawings, graphs Mi $2.25, Ph $5.00. Also available from the National Research Council of Canada, Ottawa, Canada. Limited supply only. PB 101838

1. Engineering, Electrical - Canada 2. Electronics - Canada 3. Radar - Canada 4. Radiophysics - Canada 5. NRCC ERA-184.

QUANTITIVE MEASUREMENTS AT THREE AND TEN CENTIMETERS OF RADAR ECHO INTENSITIES FROM PRECIPITATION, by A. D. Hood. National Research Council of Canada. Radio and Electrical Engineering Division. Jun 1950. 37p photos, graphs, tables Mi $2.25, Ph $5.00. Also available from the National Research Council of Canada, Ottawa, Canada $.25. PB 101990

Permanent rainstorm records were produced by photographing radar type-A displays in conjunction with the recording of meteorological data. The analysis has proved that the rate of fall in rainstorms can be measured by radar with reasonable accuracy. Simultaneous quantitative measurements at three and ten centimeters agree with both theory and previous experimental results showing that radar echoes are dependent on drop size distribution, and are proportional to the sum of the sixth power of the drop diameters contained in a unit volume. Quantitative measurements have given an absolute comparison of X-band and S-band performance and have illustrated the limitations of X-band as a useful frequency in meteorological work. The data may be applied to any radar to estimate the detection ranges of typical targets in rainstorms. NRCC 2155. NRCC ERA-180.

QUARTERLY PROGRESS REPORT 1ST, ON CONTRACT NO. W36-039-SC-32083, MODIFIED, by Renate Schmidt Bever and Virgil E. Bottom. Colorado. State College of Agriculture and Mechanic Arts, Fort Collins, Colo. Dept. of Physics. Sep 1947. 38p graphs, tables Mi $2.25, Ph $5.00. PB 102235

1. Crystals, Quartz - Research.

For 2d-12 quarterly reports see PB 102236-PB 102246.

QUARTERLY PROGRESS REPORT, 2D, ON CONTRACT NO. W-36-039-SC-32083, MODIFIED, by Renate Schmidt Bever and Virgil E. Bottom. Colorado. State College of Agriculture and Mechanic Arts, Fort Collins, Colo. Dept. of Physics. Dec 1947. 33p photos, diagr, tables Mi $2.25, Ph $5.00. PB 102236

1. Crystals, Quartz - Research.

For 1st, 3d-12th quarterly reports see PB 102235, PB 102237-102246.

QUARTERLY PROGRESS REPORT, 3D, ON CONTRACT NO. W-36-039-SC-32083, MODIFIED, by Renate S. Bever and Virgil E. Bottom. Colorado. State College of Agriculture and Mechanic Arts, Fort Collins Colo. Dept. of Physics. Mar 1948. 47p photos, drawings, graphs, tables Mi $2.50, Ph $6.25. PB 102237

1. Crystals, Quartz - Research.

For 1st-2d, 4th-12th quarterly reports see PB 102235-102236, PB 102238-102246.

QUARTERLY PROGRESS REPORT, 4TH, ON CONTRACT NO. W-36-039-SC-32083, MODIFIED, by Renate S. Bever, Virgil E. Bottom, Louis R. Weber. Colorado. State College of Agriculture and Mechanic Arts, Fort Collins, Colo. Dept. of Physics. Jun 1948. 35p photos, drawings, graphs, tables Mi $2.25, Ph $5.00. PB 102238

1. Crustals, Quartz - Research

For 1st-3d, 5th-12th quarterly reports see PB 102235-102237, PB 102239-102246.

QUARTERLY PROGRESS REPORT, 5TH, ON CONTRACT NO. W-36-039-SC-32083, MODIFIED, by Renate S. Bever, Louis R. Weber, Virgil E. Bottom. Colorado. State College of Agriculture and Mechanic Arts, Fort Collins, Colo. Dept. of Physics. Sep 1948. 41p photos, drawings, graphs, tables Mi $2.50, Ph $6.25. PB 102239

1. Crystals, Quartz - Research.

For 1st-4th, 6th-12th quarterly reports see PB 102235-102238, PB 102240-102246.

QUARTERLY PROGRESS REPORT, 6TH, ON CONTRACT NO. W-36-039-SC-32083, MODIFIED 142B, by Louis R. Weber and V. E. Bottom. Colorado. State College of Agriculture and Mechanic Arts, Fort Collins, Colo. Dept. of Physics. Dec 1948. 79p photos, diagr, graphs, tables Mi $3.50, Ph $10.00. PB 102240

1. Crystals, Quartz - Research.

For 1st-5th, 7th-12th quarterly reports see PB 102235-102239, PB 102241-102246.

QUARTERLY PROGRESS REPORT, 7TH, ON CONTRACT NO. W-36-039-SC-32083 MODIFIED 142B, by Louis R. Weber and Virgil E. Bottom. Colorado. State College of Agriculture and Mechanic Arts, Fort Collins, Colo. Dept. of Physics. Mar 1949. 54p photos, graphs, tables Mi $2.75, Ph $7.50. PB 102241

1. Crystals, Quartz - Research.

For 1st-6th, 8th-12th quarterly reports see PB 102235-102240, 102242-102246.

QUARTERLY PROGRESS REPORT, 8TH, ON CONTRACT NO. W-36-039-SC-32083, MODIFIED 142B, by Louis R. Weber and V. E. Bottom. Colorado. State College of Agriculture and Mechanic Arts, Fort Collins, Colo. Dept. of Physics. Jul 1949. 60p photos, graphs, tables Mi $2.75, Ph $7.50. PB 102242

1. Crystals, Quartz - Research.

Chapter 2 is a description of the Chladni dust pattern techniques. For 1st-7th, 9th-12th quarterly reports see PB 102235-102241, PB 102243-102246.

QUARTERLY PROGRESS REPORT, 9TH, ON CONTRACT NO. W-36-039-SC-32083 MODIFIED 142B, by Louis R. Weber and V. E. Bottom. Colorado. State College of Agriculture and Mechanic Arts, Fort Collins, Colo. Dept. of Physics. Oct 1949. 68p photos, diagrs, graphs, tables Mi $3.00, Ph $8.75. PB 102243

1. Crystals, Quartz - Research.

For 1st-8th, 10th-12th quarterly reports see PB 102235-102242, PB 102244-102246.

QUARTERLY PROGRESS REPORT, 10TH, ON CONTRACT NO. W-36-039-SC-32083, MODIFIED 142B, by Virgil E. Bottom. Colorado. State College of Agriculture and Mechanic Arts, Fort Collins, Colo. Dept. of Physics. Jan 1950. 22p diagrs, graphs, tables Mi $2.00, Ph $3.75. PB 102244

1. Crystals, Quartz - Research.

For 1st-9th, 11th-12th quarterly reports see PB 102235-102243, PB 102245-102246.

QUARTERLY PROGRESS REPORT, 11TH, ON CONTRACT NO. W-36-039-SC-32083, MODIFIED, PROJECT 142B, JAN 15, 1950-APR. 15, 1950. PARAMETERS WHICH DETERMINE THE PERFORMANCE OF PIEZOELECTRIC QUARTZ PLATES, by Virgil E. Bottom and M. C. Morgan. Colorado. State College of Agriculture and Mechanic Arts, Fort Collins, Colo. Dept. of Physics. Apr 1950. 32p drawings, graphs, tables Mi $2.25, Ph $5.00. PB 102245

1. Crystals, Quartz - Research 2. Parameters 3. Crystals, Piezoelectric - Research.

For 1st-10th, 12th reports see PB 102235-102244, 102246.

QUARTERLY PROGRESS REPORT, 12TH, ON CONTRACT NO. W-36-039-SC-32083 MODIFIED, PROJ. 142B, by Virgil E. Bottom, M. C. Morgan, Louis Dick. Colorado. State College of Agriculture and Mechanic Arts, Fort Collins, Colo. Dept. of Physics. Jul 1950. 30p graphs, tables Mi $2.00, Ph $3.75. PB 102246

1. Crystals, Quartz - Research 2. Parameters 3. Crystals, Piezoelectric - Research.

For 1st-11th reports see PB 102235-102245. Final report under this contract. Continued under Contract DA-36-039-SC-66.

SIGNAL-TO-NOISE IMPROVEMENT BY PULSE INTEGRATION, by C. E. Corum. U. S. Naval Research Laboratory. Jul 1950. 14p graphs Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $.50. PB 102305

This report is concerned with improvement of signal-to-noise ratio in radar receiving systems by means of pulse integration. It is assumed that the integration can be carried out at i-f by suitable delay techniques used in much the same manner as at viedo. Two possible methods of integration are considered: simultaneous (simple superposition) and sequential (addition side by side). It is shown that these two methods lead to identical results. It is further shown that integration at i-f is superior to integration at video. NRL R 3699.

Generators, Motors, Transmission, Distribution, and Allied Equipment

FINAL REPORT, PART IV, CONTRACT NUMBER N6-ORI-100. DESIGN OF SIREN TYPE SOUND GENERATORS. Ultrasonic Corporation, Cambridge, Mass. Jun 1948. 58p photos, drawings, graphs Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. Mimeo: $1.25. PB 102031

1. Fog - Dissipation 2. Sound - Propagation - Atmosphere effects 3. Generators, Noise - Siren type

Task order I. Project designation number NR-063-23. For final report, part I see PB 102030.

HIGH OPERATING TEMPERATURE TRANSFORMERS. FINAL REPORT ON CONTRACT W-33-038-AC-13939, by L. W. Kirkwood. Bell Telephone Laboratories, Inc., New York. Jun 1948. 163p drawings, diagrs, graphs Mi $6.25, Ph $21.25. PB 102029

Includes (1) a discussion of the general objectives sought, (2) a review of the work done under the contract and (3) a set of specifications showing the methods of constructing transformers and inductors embodying the design principles established herein.

METHOD TO MEASURE HIGH FREQUENCY PERMEABILITY OF A FERROMAGNETIC BODY, by O. Halpern. Massachusetts Institute of Technology. Radiation Laboratory. Feb 1942. 7p Mi $1.25, Ph $1.25. PB 102487

1. Conductors, Ferromagnetic 2. Frequency measurements 3. MIT Rad Lab 155.

Miscellaneous

COMPUTATION OF MECHANICAL RECTIFIER INSTALLATIONS, BY DR. ERICH ROLF. REVIEWED AND EDITED BY DR. ROBERT C. MCMASTER AND EDWARD F. ZOLTANSKI, BATTELLE MEMORIAL INSTITUTE. I-T-E Circuit Breaker Co., Philadelphia, Pa. Jun 1949. 422p diagrs, graphs, tables Mi $9.00, Ph $53.75. PB 101977

1. Rectifiers, Mechanical.

Contract NObs-28577. See also PB 102111.

ELLIPTICALLY POLARIZED WAVES AND ANTENNAS, by M. L. Kales and J. I. Bohnert. U. S. Naval Research Laboratory. Jun 1950. 30p photos, drawings Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D.C. $.75. PB 102306

Various properties of elliptically polarized waves and antennas are investigated by utilizing a complex vector method. Well-known relations derived for linear polarization appear as special cases of more general relations for elliptical polarization. A geometrical representation of complex vectors provides a corresponding geometrical interpretation of many of the results obtained. Elliptically polarized fields are resolved into "orthogonal" elliptically polarized components, of which linear and circular components are special cases. Formulas are obtained relating to the polarization ellipse, the polarization pattern, ellipticity, phase, and sense of polarization. The notions of radiation pattern, gain, beamwidth, and phase are examined. NRL R 3686.

EXPLORATORY RESEARCH ON THE APPLICATION OF ULTRASONICS TO SPOTWELDING, by J. B. Jones, F. J. Turbett, J. V. Kane, under Contract No. NOa(s)-10459. Submitted to Bureau of Aeronautics. Aeroprojects Inc., West Chester, Pa. Aug 1950. 70p photos, diagrs, graphs, tables Mi $3.00, Ph $8.75. PB 102278

An investigation was undertaken to determine the effects of ultrasonics on the spotwelding of 24S-T Alclad aluminum alloy. Tests were conducted at 1000 kc, 300 kc, and 15 kc, but positive results were achieved only in the 15 kc tests. Improvements were noted in the average and minimum shear strengths, in the coefficients of variation, and in the incidence of cracks; in certain instances, the microstructure of the ultrasonically treated spotwelds of the cast structure, and a blending of the cast metal into the wrought grains of the rolled sheet. Reduction in the electrical resistance through .025 Alclad sheets resulted from the utilization of ultrasonic energy. The probability of alleviating the sheet cleaning problem by this means was established. Further investigation into the problem was recommended. Research report no. 50-5.

MINIMUM LEAKAGE AND CLEARANCE DISTANCES FOR ELECTRICAL POWER SYSTEMS, by J. E. Hart and A. T. McClinton. U. S. Naval Research Laboratory. Jul 1950. 27p photos, drawing, graphs, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $.75. PB 102307

A technique for determining the minimum safe-leakage distance for electrical power installations has been established. This method recognizes the damaging effects of surface leakage currents and establishes a voltage, called the tracking voltage, associated with these leakage currents as a criterion for minimum leakage distance. The proposed technique gives results that recognize the effects of environmental conditions and surface contamination as well as the arc-resisting qualities of the insulation. Recommended leakage distances have been prepared on the basis of measured values of contamination found on submarine electrical panels. NRL R 3711.

OPTIMUM THERMAL COMPENSATION OF CAPACITANCE-TUNED L-C CIRCUITS, by John A. Connor U. S. Naval Research Laboratory. Jun 1950. 24p diagrs, graphs Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $.75. PB 102303

An analysis has been made of the conditions for the attainment of optimum thermal compensation in capacitance-tuned L-C circuits, with particular emphasis upon the correct application of temperature-compensating capacitors. It has been shown that a definite advantage exists in this process if the trimmer capacitor has a temperature coefficient of capacitance (TC) inversely proportional to its capacitance. For broad-band tuning where optimum compensation can be accomplished at only one capacitance setting, the maximum circuit stability will be retained if the circuit is compensated at some optimum capacitance setting. It is shown that the optimum total circuit capacitance is equal to twice the capacitance computed on the (hypothetical) assumption that the maximum and minimum total capacitances are in series. NRL R 3688.

PLASMA OSCILLATIONS IN A STATIC MAGNETIC FIELD, by E. P. Gross. Massachusetts Institute of Technology. Laboratory for Insulation Research. Oct 1950. 32p. Mi $2.25, Ph $5.00. PB 102325

A theory of the small-amplitude oscillations of an ionized gas in a static magnetic field is developed, included the effects of temperature motions. The Boltzmann equation is solved for this problem, and exact expressions are obtained for the distribution function and dispersion relation. Contract N5ori-07801, NR-074-041. MIT LIR TR 39.

PROGRESS REPORT NO. VIII ON PROJECT N5-ORI-07801. Massachusetts Institute of Technology. Laboratory for Insulation Research. Nov 1950. 49p drawings, graphs, table Mi $2.50, Ph $6.25.
PB 102421

1. Spectroscopy, Dielectric 2. Crystallography - X-rays 3. Photoconductors 4. Dielectrics - Breakdown theory 5. Conductors, Semi-Ferromagnetic.

ÜBER DAS VERHALTEN VON ROHREN AUS KISELSÄUREHALTIGEN KERAMISCHEN MASSEN IN ELEKTRISCHEN OFEN (BEHAVIOR OF ELECTRIC FURNACE TUBES MADE OF CERAMIC PASTES CONTAINING SILICIC ACID), by Dr. Dawihl. Studiengesellschaft Hartmetall, Berlin. Oct 1936. 6f (Text in German) Mi $1.25, Enl Pr $2.50.
PB 102096

1. Tubes, Ceramic - Germany 2. Furnaces, Electric - Effect of silicic acid - Germany 3. BIOS FR 925 LD 4. Micro BIOS HEC 11081 5. Micro BIOS FD 3755/47, Frames 1-4.

Abstract available as PB 102096s. 2p. Mi $1.25, Ph $1.25. Listed in BIOS FR 925 appx. I, p. 8.

UNBALANCED TERMINATIONS ON A SHIELDED-PAIR LINE, by K. Tomiyasu. Harvard University. Cruft Laboratory. Sep 1949. 33p photo, diagrs, graphs Mi $2.25, Ph $5.00. PB 102360

Determination of the unbalanced components of current in a two-wire or shielded-pair transmission line by means of comparing the standing-wave distributions on the two conductors is explained. The theoretical basis and computations are outlined, and a representation in terms of incident and reflected waves is developed. The measurement of reflected components from an unbalanced radiative termination on a slotted shielded-pair line is described, including a detailed description of the slotted line and its characteristics. The existence of a condition of minimum unbalanced reflected component from end-coupled antennas is shown experimentally. Contract N5 ori-76, Task order no. 1 NR 078-011. HU CL TR 86.

FOOD AND KINDRED PRODUCTS

ABSORPTION OF FAT IN VARIOUS NUTRITIONAL AND ENVIRONMENTAL STATES; A BIBLIOGRAPHY AND REVIEW OF THE LITERATURE, by I. L. Chaikoff and others. Oct 1947. 133p tables Mimeo: $3.50. PB 92026

1. Oils and fats - Absorption - Bibliography 2. Nutrition - Research - Bibliography 3. U. S. Quartermaster Corps. Food and Container Institute for the Armed Forces.

ARCTIC FIELD TRIAL OF USAF SURVIVAL RATIONS, BLAIR LAKE, ALASKA, JANUARY 1950, by Harry C. Dyme. U. S. Air Materiel Command. Engineering Division. Aero-Medical Laboratory, Wright-Patterson Air Force Base, Dayton, Ohio. Aug 1950. 142p photos, graphs, tables Mi $5.75, Ph $18.75.
PB 102351

1. Food rations, Emergency 2. SA-1 (Food ration) 3. ST-1 (Food ration) 4. Low temperature research 5. AAF TR 6019.

FEEDING PROBLEMS IN MAN AS RELATED TO ENVIRONMENT, AN ANALYSIS OF UNITED STATES AND CANADIAN ARMY RATION TRIALS AND SURVEYS, 1941-1946, by Robert E. Johnson and Robert M. Kark. U. S. Quartermaster Food and Container Institute. Jun 1946. 100p photos, graphs, tables Available from Office of Technical Services. U. S. Dept. of Commerce, Washington 25, D. C. $2.50.
PB 102419

1. Food supply, Military 2. Diet - Effect of climate 3. Rations, Emergency 4. Harvard University. Fatigue Laboratory.

NUTRITION AND RESISTANCE TO CLIMATE STRESS, WITH PARTICULAR REFERENCE TO MAN, by H. H. Mitchell and Marjorie Edman. U.S. Quartermaster Food and Container Institute. Nov 1949. 119p tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $3.00. PB 102420

1. Nutrition, Military 2. Diet - Effect of climate 3. Cold - Physiological effects 4. Altitude - Physiological effects 5. Temperature - Physiological effects 6. Illinois. University. Division of animal nutrition.

PRESERVING FOODS BY FREEZING, by David L. Mackintosh, Gladys E. Vail and George A. Filinger. Kansas. Agricultural Experiment Station, Manhattan, Kansas. Mar 1949. 77p photos, graphs, tables Mi $3.50, Ph $10.00. PB 102025

1. Food - Freezing 2. Poultry - Refrigeration 3. Fruit - Freezing 4. Vegetables - Freezing 5. Meat - Refrigeration.

Circular 249.

FUELS AND LUBRICANTS

BERICHT ÜBER DIE RAMAN-SPEKTRALANYTISCHE UNTERSUCHUNG VON 9 SPALT DESTILLATEN (REPORT RELATING TO RAMAN SPECTRUM ANALYSIS OF 9 FRACTIONAL DISTILLATES), by Prof. Goubeau. Rhenania-Ossag Mineralölwerke A. G., Hamburg, Ger. 1943. 15f tables (Text in German) Mi $1.75, Enl Pr $3.75. PB 102225

1. Gasoline - Analysis - Germany 2. Spectrographic analysis - Germany 3. Micro BIOS FD 2875/46, Item 91, Frames 5048-5061.

Abstract available as PB 102225s. 1p. Mi $1.25, Ph $1.25. Includes notes and correspondence relating to this report.

BERICHT ÜBER DIE TAGUNG DER ARBEITSGEMEINSCHAFT FÜR KLOPFMESSUNG AM 15. UND 16. JULI 1941 IN OPPAU. (REPORT OF THE CONFERENCE ON KNOCK MEASUREMENT ON 15 AND 16 JULY 1941 AT OPPAU). I. G. Farbenindustrie A. G., Oppau, Ger. Jul 1941. 39f graphs, tables (Text in German) Mi $2.25, Enl Pr $6.25.
PB 102087

1. Fuels, Aviation - Knocking - Germany 2. Fuels, Aviation - Lead content - Germany 3. Gasoline - Octane number - Germany 4. Micro BIOS FD 2876/46, Item 98, Frames 1-38.

Includes the following papers: Bestimmung der bleiempfindlichkeit von kraftstoffen, von E. Singer; Mischwert, von F. Jantsch; Oktanzahlmessung hochklopfester kraftstoffe, von W. Witschakowski; Anforderungen an einstellkraftstoffe, von O. Widmaier; Über versuche zur bestimmung der klopfstärke, von E. Schuch.

COMBUSTIBILITY OF METHYLENE CHLORIDE, AND INFLAMMABILITY AND CLASSIFICATION OF METHANOL. I. G. Farbenindustrie A. G., Wolfen, Ger. 1940-1944. 35f photo, graphs, tables (Text in German) Mi $2.25, Enl Pr $6.25. PB 102055

1. Methane, Dichloro - Germany 2. Methane, Dichloro - Ignition - Germany 3. Methanol - Ignition - Germany 4. Methanol - Physical properties - Germany 5. Micro BIOS FD 1047/47, Frames 1-32.

Abstract available as PB 102055s. 2p. Mi $1.25, Ph $1.25. T IV bericht no. 850 Pa, 958 Pa and two unnumbered reports are on this film.

EINFLUSS VON ZUSÄTZEN AUF DIE LAGERBESTÄNDIGKEIT VON KRAFTSTOFFEN (EFFECT OF ADDITIVES ON THE STORAGE STABILITY OF FUELS), by Mayer-Bugström and F. Seeber. Deutsche Versuchsanstalt für Luftfahrt E. V., Berlin. Dec 1939. 71f photos, graphs, tables (Text in German) Mi $3.50, Enl Pr $11.25. PB 102082

1. Gasoline - Storage - Germany 2. Gasoline - Additives - Germany 3. ZWB FB 1144 4. Micro TOM 225 Item 68 5. Micro BIOS FD 2876/46, Item 68, Frames 1-70.

Abstract available as PB 102082. 1p. Mi $1.25, Ph $1.25.

EVALUATION OF CONVERTERS FOR EXOTHERMIC AND ENDOTHERMIC CATALYTIC REACTIONS OCCURRING WITHIN NARROW TEMPERATURE LIMITS, BY GUSTAV WIRTH. TRANSLATED by R. C. Grass and H. J. Kandiner. U. S. Bureau of Mines. Nov 1950. 29p drawings, graphs Mi $2.00, Ph $3.75. PB 102353

In exothermic and endothermic catalytic reactions, controls of the temperature is of utmost importance. Basic calculations are developed for determining catalyst volumes of various types of reactors that give particular temperature distributions, and the individual designs are compared. Translation of T.O.M. Reel 134 section I-B, item 37. BM IC 7587.

EXAMINATION AND CHECK UPON LUBRICANTS, PART II, BY RUDOLF HALDER. SUPPLEMENT TO REPORT BY DR. ZORN ON SYNTHETIC LUBRICANTS. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. Feb 1949. 89p photos, diagrs, graphs, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. Mimeo: $2.25. PB 97907s5

1. Lubricating oils, Synthetic - Tests - Germany 2. Cobalt hydrides - Synthesis - Germany 3. U. S. Field Information Agency, Technical 4. Joint Intelligence Objectives Agency 5. FIAT FR 1249, Part 5.

Cover date is Sep 1950. French administration of the I. G. Farben, Ludwigshafen on the Rhine Feb 1949. For Parts 1-4, 6 see PB 97907-PB 97907s4, PB 97907s6.

KLOPFFESTIGKEIT VON FLIEGERKRAFTSTOFFEN (KNOCK RESISTANCE OF AVIATION SPIRITS), by Denn. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. Oct 1942. 7f graphs (Text in German) Mi $1.25, Enl Pr $2.50. PB 102088

1. Fuels, Anti-knock - Tests - Germany 2. Fuels, Aromatic - Germany 3. Fuels, Aromatic - Octane numbers - Germany 4. Micro BIOS FD 2876/46, Item 99, Frames 1-6.

Abstract available as PB 102088s. 1p. Mi $1.25, Ph $1.25. LU 558.

PILOT-PLANT GASIFICATION OF PULVERIZED COAL WITH OXYGEN AND HIGHLY SUPERHEATED STEAM, by G. R. Strimbeck, J. H. Holden, L. P. Rockenback, J. B. Cordiner, Jr., and L. D. Schmidt. U. S. Bureau of Mines. Nov 1950. 91p photos, drawings, diagrs, graphs, tables Mi $4.25, Ph $12.50. PB 101855

Experimental work is reported on the gasification of 90-percent through 200-mesh, strongly coking Sewickley-bed coal with oxygen and with steam in three temperature ranges, namely 2,700°F to 3,400°F, 1,600° to 2,000°F, and 230° to 250°F. The process indicated adaptability for the production of synthesis gas on a commercial scale. BM RI 4733.

PRÜFUNG VERSCHIEDENER SYNTHETISCHER SCHMIERÖLE IM BMW 132 EINZYLINDERMOTOR (TESTING OF SYNTHETIC LUBRICATING OILS IN BMW 132 SINGLE-CYLINDER ENGINE), by W. Glaser. Deutsche Versuchsanstalt für Luftfahrt E. V., Berlin. May 1940. 14f graphs, tables (Text in German) Mi $1.75, Enl Pr $3.75. PB 102083

1. Lubricating oils - Tests - Germany 2. BMW 132 (Engine) 3. ZWB FB 1215 4. Micro BIOS FD 2876/46, Item 70, Frames 1-14.

Abstract available as PB 102083s. 1p. Mi $1.25, Ph $1.25.

THERMOELEKTRISCHES MESSVERFAHREN ZU VERGLEICHENDEN REIBUNGSUNTERSUCHUNGEN VON SCHMIERMITTELN IM ZUSTAND DEN GRENZSCHMIERUNG (THERMO-ELECTRIC MEASURING PROCESS FOR COMPARATIVE FRICTION TESTS ON LUBRICANTS WITH BOUNDARY LUBRICATION), by V. Vieweg, J. Kluge, F. Maske. Germany. Physikalisch-Technische Reichsanstalt. Jul 1941. 32f photos, drawings, graphs (Text in German and English) Mi $2.25, Enl Pr $6.25. PB 102086

1. Lubricants - Friction tests - Germany 2. Friction - Measurements - Germany 3. ZWB FB 1142 4. Micro BIOS FD 2876/46, Item 78, Frames 1-15, 17, 19, 23-26+9.

English translation included.

ÜBER DAS VERHALTEN VON FETTEN IN DER KÄLTE (BEHAVIOR OF GREASES AT LOW TEMPERATURE), by K. Siebald. Deutsche Versuchsanstalt für Luftfahrt E. V., Institut für Bebriebsstofforschungen. Jan 1941. 39f photo, drawing, graphs (Text in German and English) Mi $2.25, Enl Pr $6.25. PB 102085

1. Greases - Tests - Germany 2. Greases - Temperature effects - Germany 3. Low temperature research - Germany 4. Penetrometers - Germany 5. ZWB FB 1331 6. Micro BIOS FD 2876/46, Item 75, Frames 1-27+10.

Abstract available as PB 102085s. 1p. Mi $1.25, Ph $1.25.

ÜBER DAS VERHALTEN VON SCHMIERÖLEN IN DER KÄLTE (LOW TEMPERATURE BEHAVIOR OF LUBRICATING OILS), by K. Siebald. Deutsche Versuchsanstalt für Luftfahrt E. V., Berlin. Institut für Betriebstofforschungen. Oct 1939. 122f photos, graphs (Text in German and English) Mi $5.00, Enl Pr $17.50. PB 102081

1. Lubricating oils - Solidification - Germany 2. Viscometers - Germany 3. ZWB FB 1106 4. Micro BIOS FD 2876/46, Item 67, Frames 1-80 +36.

Abstract available as PB 102081s. 2p. Mi $1.25, Ph $1.25.

ÜBER DIE RHEOLOGISCHEN EIGENSCHAFTEN DER SCHMIERMITTEL (STRUKTURMECHANIK RHEONOMER SYSTEME XV) (CONCERNING THE RHEOLOGIC PROPERTIES OF LUBRICANTS. STRUCTURAL MECHANICS OF RHEONOMIC SYSTEMS, NO. XV), by H. Umstätter. Oct 1950. 26p drawings, graphs Mi $2.00, Ph $3.75. PB 102344

1. Lubricants - Viscosity - Germany 2. Lubricants - Properties - Germany 3. STS 95.

Translation from Kolloid-zeitschrift v. 116, no. 1, 1950, p. 18-27.

ÜBER LABORATORIUMS- UND MOTORVERFAHREN ZUR PRÜFUNG DER KLOPFFESTIGKEIT VON OTTO-KRAFTSTOFFEN (TESTING THE KNOCK RESISTANCE OF OTTO FUELS BY RESEARCH AND ENGINE METHODS), by A. von Philippowich. Deutsche Versuchsanstalt für Luftfahrt E. V., Berlin. 1941. 58f graphs, tables (Text in German) Mi $2.75, Enl Pr $8.75. PB 102084

1. Engines, Otto - Knocking - Germany 2. Fuels, Aviation - Knocking - Germany 3. Fuels - Tests - Germany 4. Micro BIOS FD 2876/46, Item 74, Frames 1-55.

Abstract available as PB 102084s. 1p. Mi $1.25, Ph $1.25.

UNTERSUCHUNG EINES NEUENTWICKELTEN DIESELKRAFTSTOFFES (RCH 5009) IM EINZLINDER-DIESELMOTOR (TEST OF A NEWLY DEVELOPED DIESEL FUEL IN THE SINGLE-CYLINDER DIESEL ENGINE). Germany. Zentrale für Wissenschaftliches Berichtswesen der Luftfahrt. 1936. 17f photos, graphs, tables (Text in German) Mi $1.75, Enl Pr $3.75. PB 102073

1. Engines, Diesel - Fuels - Germany 2. RCH 5009 (Fuel) 3. Micro TOM 225 Item 55 4. Micro BIOS FD 2876/46, Item 55, Frames 1-17 5. ZWB FB 680.

Abstract available as PB 102073s. 2p. Mi $1.25, Ph $1.25.

UNTERSUCHUNG EINES SYNTHETISCHEN SCHMIERÖLES DER RUHR-CHEMIE A. G. IM HEISSGEKÜHLTEN EINZYLINDER VERSUCHSMOTOR (TESTS OF A SYNTHETIC LUBRICATING OIL IN A LIQUID-COOLED SINGLE-CYLINDER ENGINE), by K. Dehn. Germany. Zentrale für Wissenschaftliches Berichtswesen der Luftfahrt. Apr 1937. 26f photo, graphs (Text in German and English) Mi $2.00, Enl Pr $5.00. PB 102080

1. Lubricating oils - Tests - Germany 2. ZWB FB 804 3. Micro BIOS FD 2876/46, Item 66, Frames 1-22.

Abstract available as PB 102080s. 2p. Mi $1.25, Ph $1.25.

HIGHWAYS AND BRIDGES

COMPACTION OF SOIL, A STUDY OF THE PERFORMANCE OF PLANT, by F.H.P. Williams and D. J. Maclean. Gt. Brit. Dept. of Scientific and Industrial Research. Building Research Station, Watford, England. 1950. 61p photos, drawings, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.40. PB 102015

1. Roads - Surface treatment - Soil compaction - Gt. Brit. 2. Road rollers - Gt. Brit. 3. Soils - Compaction - Gt. Brit. 4. DSIR RR TP 17.

S. O. Code no. 47-110-17.

ROAD SURFACE PROPERTIES: REPORT OF COMMITTEE, AND PAPER ON RUBBER IN BITUMINOUS PAVEMENT. U. S. Highway Research Board. 1950. 28p photos, graphs, tables Available from Highway Research Board, National Research Council, 2101 Constitution Ave., Washington 25, D. C. PB 101979

1. Roads - Surface treatment - Antiskid 2. Roads - Surface treatment - Rubber-bituminous combination.

Bulletin no. 27. Presented at the twenty-ninth annual meeting 1949. Contents: Report of committee on antiskid properties of road surfaces, Ralph A. Moyer, Chairman. p. 1-12 - Field experiments with powdered rubber in bituminous road construction, by Tilton E. Shelburne and R. L. Sheppe. p. 13-24.

INSTRUMENTS

APPLICATION OF CORRELATION FUNCTIONS IN THE DETECTION OF SMALL SIGNALS IN NOISE, by Y. W. Lee, T. P. Cheatham, Jr., J. B. Wiesner. Massachusetts Institute of Technology. Research Laboratory of Electronics, Cambridge, Mass. Oct 1949. 13p graphs Mi $1.75, Ph $2.50. PB 102361

A general concept of correlation functions is given prior to a mathematical reinterpretation of the correlation function in terms of the sum of the products obtained by representing the function as a discrete time series. Correlation functions are a measure of the mean relationship existing between the product of all pairs of points of the time series involved, separated in time by a delay τ. An electronic computer capable of obtaining these correlation functions is described and an application of the correlator to the detection of small signals in noise is presented. Further, the advantage of detecting a signal of known frequency by the use of cross-correlation is demonstrated. Report presented at the I.R.E. national convention in New York, March 7-10, 1949. MIT RLE TR 141.

DRAWINGS OF IMAGE CONVERTERS. Allgemeine Elektrizitäts Gesellschaft A. G., Berlin. 1944. 6f drawings only (Legends in German) Mi $1.25, Enl Pr $2.50. PB 102203

1. Converters, Image - Design - Germany 2. Micro BIOS/DOCS/Dutch 3022/2352 3. Micro BIOS FD 4409/47, Frames 1-5.

English abstract included.

MAGNETIC SUSCEPTIBILITY BRIDGE: DESIGN, CONSTRUCTION, AND CALIBRATION, by B. H. Olsson. New Zealand. Dept. of Scientific and Industrial Research. Dominion Physical Laboratory, Gracefield, Lower Hutt, New Zealand. Jul 1948. 58p photos, fold diagrs, graphs (part fold) Mi $2.75, Ph $7.50. Also available from Library, Dominion Physical Laboratory, Gracefield, Lower Hutt, N. Z. PB 101867

Details of design procedure, construction methods, and the system of calibration used in the manufacture of a magnetic susceptibility bridge, are given. Circuit diagrams and photographs of the completed equipment are included. Report no. 8/7/64. Text will not produce well.

MEASUREMENT OF MAGNET SUSCEPTIBILITY OF IRON SAND, AND THE DEVELOPMENT OF SPECIMENS OF KNOWN LOW SUSCEPTIBILITIES, by B. H. Olsson. New Zealand. Dept. of Scientific and Industrial Research. Dominion Physical Laboratory, Gracefield, Lower Hutt, New Zealand. Aug 1947. 20p photo, drawings, graphs Mi $1.75, Ph $2.50. Also available from Library, Dominion Physical Laboratory, Gracefield, Lower Hutt, N. Z. PB 101868

A method of determining the susceptibility of ironsand and similar materials in the earth's field is described. The variation of the susceptibility of a mixture of ironsand and a non-magnetic material as the ratio of the volume of the ironsand to the total volume changes, is discussed. From this, a method of manufacturing specimens with known low susceptibilities is derived. Report no. 8/7/65. Text will not reproduce well.

MODIFICATION AND INSTALLATION OF SEQUENCE SELECTOR ALTITUDE ACTUATOR, by James L. Anast. U. S. Air Materiel Command, Wright Field, Dayton, Ohio. Aug 1947. 9p photos, diagrs Mi $1.25, Ph $1.25. PB 102000

Modification of an absolute altimeter to furnish automatically actuating voltages at 50 to 2000 ft and at an altitude adjustable between 3000 and 8000 ft is described. These acuating voltages are used to advance the master sequence selector of the automatic flight controller Mark II in the climb, final climb, cruise, and orbiting descent sequence. Accuracies of actuation of the modified radio altimeter AN-APN 1 range from $\neq$ 5 ft at 50 ft to $\neq$ 500 ft at 2000 ft. However, this altimeter is not practical as an absolute actuator at altitudes above 5000 ft. AAF AWAF 5-2.

NEUE REGLER FÜR DIE EMULSIONS-POLYMERISATION (NEW REGULATORS FOR EMULSION POLYMERIZATION), by Dr. Schwechten. I. G. Farbenindustrie A. G., Leverkusen, Ger. Jul 1944. 12f graphs, table (Text in German) Mi $1.75, Enl Pr $3.75. PB 102056

1. Polymerization - Regulators - Germany 2. KAUTEKO (Anwendungstechnische Kommission für Kautschuk) 3. Micro BIOS FD 1402/48, Frames 1-11.

Abstract available as PB 102056s. 1p. Mi $1.25, Ph $1.25. Paper read at Scientific Rubber Conference, Jul 31, 1944.

A NEW INSTRUMENT FOR DETERMINING HYDROGEN IN SUBMARINES, by Clarke C. Minter and Lyle M. J. Burdy. U. S. Naval Research Laboratory. Jun 1950. 13p drawings, diagrs, graph, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D.C. $.50. PB 101872

A combination thermal conductivity bridge, previously described in NRL Report 3628, has been tested for efficiency in determining hydrogen and carbon dioxide without first removing the carbon dioxide. A description is given of the stable miniature resistance thermometers used as active elements in the bridges and test results for both d-c and a-c operation are reported. The effect of tilting the bridge as well as effects of changing the ambient temperature and pressure were compensated sufficiently so that the bridge complies with the standard of accuracy and stability required of a submarine hydrogen detector. NRL R 3669.

PHYSICAL REALIZATION OF AN ELECTRONIC COMPUTING INSTRUMENT, 5TH INTERIM PROGRESS REPORT, by Julian H. Bigelow, Herman H. Goldstine, Richard V. Melville, Peter Panagos, James H. Pomerene, Jack Rosenberg, Morris Rubinoff, Willis H. Ware. Princeton University. Institute for Advanced Study. Jan 1949. 134p photos, drawings, diagrs, graph, tables Mi $5.50, Ph $17.50. PB 102359

1. Computers, Electronic.

Contract W-36-034-ORD-7481. For 1st-4th reports see PB 102355-102358. See also PB 96703.

POTENTIALITIES OF TRANSITORS IN DIGITAL COMPUTING CIRCUITS, REPORT, by Dolan H. Toth. Engineering Research Associates, Inc., St. Paul, Minn. Jul 1950. 31p diagrs (2 fold), graphs, tables Mi $2.25, Ph $5.00. PB 101760

1. Transistors 2. Computers, Digital 3. U. S. Bureau of Ships.

Contract NObsr-42001. Continuation of work begun by W. P. Horton.

PROPOSED DESIGN OF THE NRL ELECTRONIC DIGITAL COMPUTER, by D. H. Gridley and B. L. Sarahan. U. S. Naval Research Laboratory. Jul 1950. 19p photos, diagrs Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $.50. PB 101875

A general-purpose, electronic digital computer (called NAREC) will be constructed at NRL for use in reduction of experimental data and in the numerical solution of complex mathematical problems. This computer is expected to perform automatically the operations of addition, subtraction, multiplication, and division with binary numbers of 44-digit precision at a rate of 9000 operations per second. It is anticipated that the NAREC will be placed in operation by January 1952 with the following six months being required to place the computer on an efficient operating schedule. NRL R 3714.

RAYLEIGH DISK AS A WAVE DIRECTION INDICATOR, by Jay V. Hall. U. S. Beach Erosion Board. Jul 1950. 28p diagrs, drawing, tables Mi $2.00, Ph $3.75. Also available free from Beach Erosion Board, U. S. Corps of Engineers, 5201 Little Falls Road, N. W., Washington 16, D. C. PB 101614

Test results of product. Appendix: Theory of the Rayleigh disk, by Walter Konig. (From Annalen der physik, März 1891(. p. 11-24. ENG BEB TM 1891).

REPORT ON CAPTURED ENEMY SIGNAL EQUIPMENT: GERMAN MINE DETECTOR, BERLIN 40 TYPE B NR. 0480, MANUFACTURER UNKNOWN. U. S. Army. European Theater of Operations. Chief Signal Officer. Nov 1944. 6p photos, drawings Mi $1.25, Ph $1.25. PB 102033

1. Detectors, Mine - Germany 2. Berlin 40 type B nr. 0480 (Mine detector).

This report will not reproduce well.

SEARCH FOR NEW RESISTIVE MATERIALS FOR HIGH-STABILITY, HIGH-TEMPERATURE-OPERATING RESISTORS. FIRST QUARTERLY ENGINEERING REPORT, NOV 10, 1949-JAN 10, 1950, by A. E. Middleton, E. R. Olson and L. R. Jackson. Battelle Memorial Institute, Columbus, Ohio. Jan 1950. 21p diagrs, graph Mi $2.00, Ph $3.75. PB 101978

1. Resistors 2. Materials, Heat resistant 3. BMI G-1396.

Contract AF 33(038)-8744. E. O. no. 111-75. For 2d-3d reports see PB 101978s and s2.

SEARCH FOR NEW RESISTIVE MATERIALS FOR HIGH-STABILITY, HIGH-TEMPERATURE-OPERATING RESISTORS. SECOND QUARTERLY ENGINEERING REPORT, JAN 10, 1950-APR 10, 1950, by A. E. Middleton, E. R. Olson and L. R. Jackson. Battelle Memorial Institute, Columbus, Ohio. Apr 1950. 25p drawing, diagr, graphs, tables Mi $2.00, Ph $3.75. PB 101798s

Contract AF 33(038)-8744. E.O. no. 111-75. For 1st and 3rd reports see PB 101978 and PB 101978s2.

SEARCH FOR NEW RESISTIVE MATERIALS FOR HIGH-STABILITY, HIGH-TEMPERATURE-OPERATING RESISTORS. THIRD QUARTERLY ENGINEERING REPORT, APR 10, 1950-JUL 10, 1950, by A. E. Middleton, E. R. Olson and L. R. Jackson. Battelle Memorial Institute, Columbus, Ohio. Jul 1950. 25p diagr, graphs, tables Mi $2.00, Ph $3.75. PB 101978s2

Contract AF 33(038)-8744. E.O. 111-75. For 1st-2d see PB 101978 and PB 101978s.

SEMICONDUCTORS. PROGRESS REPORT SEP 1 - NOV 30, 1946, by K. Lark-Horovitz and others. Purdue University. Dept. of Physics, Lafayette, Ind. 1946. 51p diagrs, graphs Mi $2.75, Ph $7.50. PB 101848

1. Conductors, Semi 2. SIG Contract W 36-039-sc-32020.

SEMICONDUCTORS. PROGRESS REPORT MAY 1, 1948 - JUL 31, 1948, by K. Lark-Horovitz and others. Purdue University. Dept. of Physics, Lafayette, Ind. 1948. 117p graphs, tables Mi $4.75, Ph $15.00. PB 101847

1. Conductors, Semi 2. SIG Contract W 36-039-sc-32020.

SERVICES, FACILITIES AND MATERIALS REQUIRED FOR RESEARCH AND DEVELOPMENT OF ACCURATE FIXED, NON-WIRE-WOUND RESISTORS, BY JOSEPH W. JIRA. QUARTERLY PROGRESS REPORT NO. 1. Continental Carbon, Inc., Cleveland, Ohio. Sep 1948. 9p Mi $1.25, Ph $1.25. PB 101842

In this work the criterion prior to this research was that small carbon-type resistors of the usual wattage rating, 1/4 to 2 watts, and applicable to various electronic circuits, required a certain method of approach in fabrication in order to yield units very stable in their performance. Method of approach was directed toward creating a highly stable resistive element by utilizing metals and their alloys as conducting mediums, and inorganic materials as bonds, - thus eliminating the erratic characteristics of organic materials at relatively high ambients. Signal Corps Specification SCL-3086-A. See also PB 101843-PB 101844 and PB 99880 for Quarterly progress reports no. 2-4 and final. SIG Contract W36-039-sc-36857, Report 1.

SERVICES, FACILITIES AND MATERIALS REQUIRED FOR RESEARCH AND DEVELOPMENT OF ACCURATE FIXED, NON-WIRE-WOUND RESISTORS, BY JOSEPH W. JIRA. QUARTERLY PROGRESS REPORT NO. 2. Continental Carbon, Inc., Cleveland, Ohio. Dec 1948. 10p tables Mi $1.25, Ph $1.25. PB 101843

In this report it is intended to demonstrate the effects of various types of ceramic bodies upon the electrical characteristics--particularly that of thermal stability--of metal-film resistors. The humidity and shelf life factors are also taken into account. The effect of the hydride and oxide ratio of pure palladium films is also evaluated. Signal Corps Specification SCL-3086-A. See also PB 101842, PB 101844 and PB 99880 for Quarterly progress reports no. 1, 3-4 and final. SIG Contract W36-039-sc-36857, Report 2.

SERVICES, FACILITIES AND MATERIALS REQUIRED FOR RESEARCH AND DEVELOPMENT OF ACCURATE FIXED, NON-WIRE-WOUND RESISTORS, BY JOSEPH W. JIRA. QUARTERLY PROGRESS REPORT NO. 3. Continental Carbon, Inc., Cleveland, Ohio. Mar 1949. 10p tables Mi $1.25, Ph $1.25. PB 101844

In this report it is intended to demonstrate the effects of "Pallagold" (Palladium-Gold) metal-alloy films upon the electrical characteristics--particularly that of thermal stability--when deposited upon ceramic carriers at various film-forming temperatures. Dept. of the Army project 3-26-00-600. Signal Corps project 2006. Signal Corps specification SCL-3086-A. See also PB 101842 - PB 101843 and PB 99880 for Quarterly progress report no. 1-2, 4. SIG Contract W36-039-sc-36857, Report 3.

SOLUTION OF HYDRAULIC FLOW DISTRIBUTION PROBLEMS THROUGH USE OF THE NETWORK CALCULATOR, by L. M. Haupt. Texas. Engineering Experiment Station, College Station, Tex. Sep 1950. 14p photo, diagr, graph, table Available from Texas Engineering Experiment Station, College Station, Texas. PB 102234

1. Calculators, Electric 2. Hydraulic systems - Flow distribution.

Research Report no. 18.

SONIC-FLOW-ORIFICE TEMPERATURE PROBE FOR HIGH-GAS-TEMPERATURE MEASUREMENTS, by Perry L. Blackshear. U. S. National Advisory Committee for Aeronautics. Sep 1950. 20p drawings, graphs Mi $1.75, Ph $2.50. PB 101772

A theoretical and experimental investigation of a sonic-flow-orifice method of measuring high gas temperatures is presented. The simplicity of construction, calibration, and operation of the device is discussed. NACA TN 2167.

TECHNIQUE AND PHYSICS OF SCINTILLATION COUNTING, by H. Kallmann. U. S. Signal Corps Engineering Laboratories, Fort Monmouth, N. J. May 1950. 69p photos, diagrs, graphs, tables Mi $3.00, Ph $8.75. PB 101682

In this report several experiments are described and certain results which have been obtained from them are given. The experiments may be classified roughly as of two types: (1) those concerned principally with basic investigations of scintillation phenomena and (2) those which illustrate various techniques in the application of the scintillation method to the study of nuclear radiations. Certain theoretical considerations dealing with the light emission process are also included. A summary is given which presents the principal results of the paper in easily accessible form. Signal Corps Proj. no. 196A. DA Proj. no. 3-99-04-061. SCEL ER E-1044.

UPPER ATMOSPHERE RESEARCH REPORT NO. XI. NOTE ON THE GEOMETRY OF GEIGER COUNTER TELESCOPES, by Homer E. Newell, Jr. and Eleanor C. Pressly. U. S. Naval Research Laboratory. Aug 1950. 16p diagrs, graphs, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. Mimeo: $.50. PB 102006

The contribution of a portion of the solid angle of a two-counter telescope to the total coincidence rate is studied for both isotropic and cosine-squared law radiation fields. Formulas and graphs are presented for estimating the percentage of counts due to radiation from directions near the telescope axis. The average length traversed by particles passing through the telescope is touched upon briefly. NRL R 3715.

VIDEO PULSE COUNTER, by C. C. Watterson. U.S. Naval Research Laboratory. May 1950. 25p photos, diagrs, graph, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. Mimeo: $.75. PB 101801

As part of an investigation of the operation of a number of pulse sources on the same channel, a pulse counter has been designed which counts discrete video pulses. The maximum counting rate is two megacycles; the minimum counting rate is 25 cps. Each of six cascaded decade counter stages operates by storing pulse counts as capacitor charges. The counter operates for a crystal-controlled one-second interval, presenting the count it obtains on six panel meters. Each meter is calibrated from 0 to 9, there being one meter for each digit of the count. NRL R3659.

LEATHER AND LEATHER PRODUCTS

LEATHER DYESTUFFS. PAPERS F1-F9 READ AT THE 11TH AKO MEETING, WOLFEN. I. G. Farbenindustrie A. G., Wolfen, Ger. 1937. 43f (Text in German) Mi $2.50, Enl Pr $7.50. PB 101892

1. Leather - Dyes and dyeing - Germany 2. AKO (Kommission für Azofarben) 3. Micro BIOS FD 3179/48, Frames unnumbered.

Abstract available as PB 101892s. 3p. Mi $1.25, Ph $1.25. See also PB 101891, 101893-101895.

LEATHER MANUFACTURING AND RELATED INDUSTRIES IN GERMANY DURING THE PERIOD 1939-1945, by C. H. Spiers. British Intelligence Objectives Committee. 1950. 137p tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $.90. PB 102301

1. Leather - Manufacture - Germany 2. Leather industries - Germany 3. BIOS OR 27.

S.O. Code no. 51-283-27.

REPORTS ON LEATHER DYESTUFFS. PAPERS G1-G9 READ AT 13TH SCIENTIFIC AKO MEETING HELD AT LUDWIGSHAFEN 3 NOV 1938. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. Nov 1938. 37f (Text in German) Mi $2.25, Enl Pr $6.25. PB 101902

1. Leather - Dyes and dyeing - Germany 2. AKO (Kommission für Azofarben) 3. Micro BIOS FD 291/50, Frames unnumbered.

Abstract available as PB 101902s. 3p. Mi $1.25, Ph $1.25. See also PB 101887-101889, 101901, 101903.

MACHINERY

ANALYSIS OF THE AIR FLOW THROUGH FOUR STAGES OF HALF-VORTEX BLADING IN AN AXIAL COMPRESSOR, by D. G. Ainley and R. A. Jeffs. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Apr 1946. 27p diagrs, graphs, drawings, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $1.25. PB 102117

This report records the results of low Mach number aerodynamic tests on axial-flow compressor blading of half-vortex design. The air flow through four stages of blading was traversed after every blade row, while the compressor was running at peak efficiency and pressure rise. The results show a steady deterioration of the radial distribution of axial velocity through the compressor, and there is reason to believe that the "work done" factor which has been found necessary in axial compressor design to correlate the actual work done per stage with the simple theoretical value is primarily attributable to this deterioration of flow. The air deflections in each row of blades have been compared with (a) the design values and (b) cascade tests. These deflections showed good agreement with the values predicted by cascade tests, but departed considerably from the design values due to the changes in velocity profile and secondary flows. Measurements of total-head losses and air-outlet angles from the blade rows suggested the presence of a pair of trailing vortices from every blade, together with the formation of secondary induced flows due to the relative motion of the blade tips and adjacent walls. In general the results infer that it may be desirable to allow for a change in axial velocity distribution through a compressor to reduce stalling losses at the tips and roots of the blades in the high pressure stages, and also suggest that shrouded blades may show a slight improvement in overall efficiency. Cover date is 1950. S.O. Code no. 23-2383. ARC RM 2383.

ANALYSIS OF TURBULENT FREE-CONVECTION BOUNDARY LAYER ON FLAT PLATE, by E.R.G. Eckert and Thomas W. Jackson. U. S. National Advisory Committee for Aeronautics. Oct 1950. 22p drawings, graphs Mi $2.00, Ph $3.75. PB 101980

A calculation was made for the flow and heat transfer in the turbulent free-convection boundary layer on a vertical flat plate. Formulas for the heat-transfer coefficient, boundary layer thickness, and the maximum velocity in the boundary layer were obtained. NACA TN 2207.

APPLICATION OF RADIAL-EQUILIBRIUM CONDITION TO AXIAL-FLOW COMPRESSOR AND TURBINE DESIGN, by Chung-Hua Wu and Lincoln Wolfenstein. U. S. National Advisory Committee for Aeronautics. Jan 1949. 33p diagrs, graphs Available from Supt. of Documents, U. S. Gov't. Printing Office, Washington 25, D. C. $.25. PB 102414

Basic general equations governing the three-dimensional compressible flow of gas through a compressor or turbine are given in terms of total enthalpy, entropy, and velocity components of the gas. Two methods of solution are obtained for the simplified, steady axially symmetric flow; one involves the use of a number of successive planes normal to the axis of the machine and short distances apart, and the other involves only three stations for a stage in which an appropriate radial-flow path is used. Methods of calculation for the limiting cases of zero and infinite blade aspect ratios and an approximate method of calculation for finite blade aspect ratio are also given. Cover date is 1950. NACA Report 955.

BOHRVERSUCHE MIT HARTMETALL PLÄTTACHEN AUS DEM OXYDROHR-OFEN (DRILLING TESTS WITH HARD METAL TIPS FROM THE OXIDE TUBE FURNACE), by Dr. Dawihl. Studiengesellschaft Hartmetall, Berlin. Aug 1936. 3f (Text in German) Mi $1.25, Enl Pr $1.50. PB 102257

1. Tools, Cutting - Carbide tipped - Tests - Germany 2. Lathe tools - Tips - Tests - Germany 3. BIOS FR 925 LD 4. Micro BIOS HEC 11072 5. Micro BIOS FD 3748/47, Frames 1-2.

Abstract available as PB 102257s. 1p. Mi $1.25, Ph $1.25. Listed in BIOS FR 925 appx. I p. 7 as Report 65/279 (HEC 11072).

CUTTING TESTS WITH OSRAM-X TIPS. Osram G.m.b.H., Berlin. Jan 1932. 9f (Text in German) Mi $1.25, Enl Pr $2.50. PB 102095

1. Tools, Cutting - Hard facing - Cutting tests - Germany 2. Osram X (Trade name) 3. BIOS FR 925 LD 4. Micro BIOS HEC 11001 5. Micro BIOS HEC 11002 6. Micro BIOS FD 3719/47, Frames 1-8.

Abstract available as PB 102095s. 1p. Mi $1.25, Ph $1.25. Listed in BIOS FR 925 appx. I, p. 1 as report no. 65/201 and 65/202.

EINIGE SONDERPROBLEME DES RINGVERFAHRENS (SOME SPECIAL PROBLEMS OF THE RING PROCESS FOR COMBUSTION ENGINES), by M. Bentele. Lilienthal Gesellschaft für Luftfahrtforschung, Berlin. 1943. 9f drawing, graphs (Text in German and English) Mi $1.25, Enl Pr $2.50. PB 102063

1. Ring process - Germany 2. Engines, Combustion - Germany 3. LG B158 4. Micro BIOS FD 2872/46, Item 9, Frames 1-3+5.

Includes English translation and abstract. Abstract available as PB 102063s. 1p. Mi $1.25, Ph $1.25.

GENERAL ALGEBRAIC METHOD APPLIED TO CONTROL ANALYSIS OF COMPLEX ENGINE TYPES, by Aaron S. Boksenbom and Richard Hood. U. S. National Advisory Committee for Aeronautics. Apr 1949. 15p diagrs Available from Supt. of Documents, U. S. Gov't. Printing Office, Washington 25, D. C. $.15. PB 102415

A general algebraic method of attack on the problem of controlling gas-turbine engines having any number of independent variables was utilized employing operational functions to describe the assumed linear characteristics for the engine, the control, and the other units in the system. Matrices were used to describe the various units of the systems, to form a combined system showing all effects, and to form a single condensed matrix showing the principal effects. This method directly led to the conditions on the control system for noninteraction so that any setting disturbance would affect only its corresponding controlled variable. The response-action characteristics were expressed in terms of the control system and the engine characteristics. Cover date is 1950. NACA Report 980.

HERSTELLUNG VON SCHNEIDPLÄTTCHEN ZUR ISOLIERSTOFFBEARBEITUNG AUF DER GRUNDLAGE DER ALUMINUMOXYDS (CUTTING TOOLS MADE OF CERAMIC MATERIAL WITH ALUMINUM OXIDE BASE). Studiengesellschaft Hartmetall, Berlin. Jan 1938. 13f (Text in German) Mi $1.75, Enl Pr $3.75. PB 102101

1. Tools, Cutting - Ceramic - Germany 2. Ceramics - Uses - Germany 3. BIOS FR 925 LD 4. Micro BIOS HEC 11124 5. Micro BIOS FD 3780/47, Frames 1-11.

Abstract available as PB 102101s. 2p. Mi $1.25, Ph $1.25. Listed in BIOS FR 925 appx. I, p. 12 as HEC 11,124.

HOLLOW AND CERAMIC BLADES OF EXHAUST GAS TURBINES. Hirth Motorenwerke G.m.b.H., Stuttgart, Ger. Nov 1945. 7f photos, graphs Mi $1.25, Enl Pr $2.50. PB 102269

1. 9-2279 (Turbine) 2. Propeller blades, Hollow - Tests - Germany 3. Propeller blades, Ceramic - Tests - Germany 4. Micro GDC 10/4019T 5. Micro BIOS FD 955/48, Frames 1-6.

Abstract available as PB 102269s. 1p. Mi $1.25, Ph $1.25.

MATERIALS FOR STEAM TURBINE ROTORS, by A. M. Bruce. U. S. Naval Engineering Experiment Station, Annapolis, Md. May 1949. 58p photos, diagrs, graphs, tables Mi $2.75, Ph $7.50. PB 102132

An investigation was made to determine the chemical, mechanical and high temperature properties of materials suitable for steam rotors and blading. The materials examined were Ni-Cr-Mo-V, Cr-Mo, Mo-V, Cr-Mo-V, Cr-Ni-Mi-V, and Ni-Mo steels. Normal temperature tensile properties for three locations with respect to the cross-section of the forging, high temperature tensile properties, stress-rupture and creep test data at temperatures from 830 to 1100°F, and values for percent plastic deformation

at various intervals obtained during creep tests, are tabulated. Information concerning the test specimens and descriptions of the microstructures are presented. The materials exhibiting the best properties in each of the above tests are discussed. NAV EES C 1689D.

OVERALL PERFORMANCE CHARACTERISTICS OF A FOUR-STAGE REACTION TURBINE, by D. G. Ainley, S. E. Petersen, and R. A. Jeffs. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Sep 1946. 20p photo, drawings, graphs Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $1.00. PB 102321

A four-stage reaction turbine has been tested with cold air over a large part of its working range. The characteristics are presented in a number of different forms suitable for both normal performance estimation and for analysis of some of the variations in the internal air flow which take place under different turbine running conditions. Cover date is 1950. S.O. Code no. 23-2416. ARC RM 2416.

PREKNOCK VIBRATIONS IN A SPARK-IGNITION ENGINE CYLINDER AS REVEALED BY HIGH-SPEED PHOTOGRAPHY, by Cearcy D. Miller and Walter O. Logan, Jr. U. S. National Advisory Committee for Aeronautics. 1944. 23p photos, drawing, graphs Available from Supt. of Documents, U. S. Government Printing Office, Washington 25, D. C. $.20. PB 101870

1. Engines, Spark-ignition - Cylinders - Vibrations 2. Photography, High speed 3. U. S. Aircraft Engine Research Laboratory, Cleveland, Ohio 4. NACA 785.

Also in PB 101722.

RESEARCH INTO GRINDING METHODS. Aix-la-Chapelle. Technische Hochschule. 1941-1942. 164f photos, graphs, tables (Text in German and English) Mi $6.25, Enl Pr $22.50. PB 102262

1. Machines, Grinding - Germany 2. Grinding wheels - Germany 3. Micro BIOS FD 4168/47, Frames 1-156.

Abstract available as PB 102262s. 2p. Mi $1.25, Ph $1.25. Includes article from Deutsche Kraftforschung 1942 no. 65 by H. Opitz and W. Vits entitled "Schleifvorgang und schleiffl\u00fcssigkeit (Grinding process and grinding fluids).

ROCK DRILLS, "WIDIA" FACED TOOLS, ETC. Krupp, Friedrich A. G., Widia Fabrik, Essen, Ger. 1943-1946. 200f photos, drawings, graphs (Text in German, English and Italian) Mi $7.00, Enl Pr $26.25. PB 102109

1. Drills, Rock - Germany 2. Tools, Cutting - Carbide tipped - Germany 3. Widia tools - Germany 4. Micro BIOS FD 4224/47, Frames 1-182.

Abstract available as PB 102109s. 2p. Mi $1.25, Ph $1.25.

SUPERSONIC AXIAL-FLOW COMPRESSOR, by Arthur Kantrowitz. U. S. National Advisory Committee for Aeronautics. Mar 1946. 12p drawings Available from Supt. of Documents, U. S. Gov't Printing Office, Washington 25, D. C. $.15. PB 102256

An investigation has been made to explore the possibilities of axial-flow compressors operating with supersonic velocities into the blade rows. Preliminary calculations showed that very high pressure ratios across a stage, together with somewhat increased mass flows, were apparently possible with compressors which decelerated air through the speed of sound in their blading. As an approach to the study of supersonic compressors, three possible velocity diagrams are discussed briefly. In this compressor, air decelerates through the speed of sound in the rotor blading and enters the stators at subsonic speeds. A pressure ratio of about 1.8 at an efficiency of about 80 percent has been obtained. Cover date is 1950. NACA Report 974.

UEBER DIE HERSTELLUNG VON DIAMANTSCHEIBEN (MANUFACTURE OF DIAMOND CUTTING WHEELS), by Dawihl and Bergmann. Studiengesellschaft Hartmetall, Berlin. Jan 1939. 3f (Text in German) Mi $1.25, Enl Pr $1.50. PB 102261

1. Diamond tools - Germany 2. BIOS FR 925 LD 3. Micro BIOS HEC 11166 4. Micro BIOS FD 3800/47, Frames 1-2.

Abstract available as PB 102261s. 1p. Mi $1.25, Ph $1.25. Listed in BIOS FR 925 appx. I, p. 16 as Report 65/429 (HEC 11166).

MEDICAL RESEARCH AND PRACTICE

BEHAVIOR PATTERNS OF THE LABORATORY MOUSE UNDER AUDITORY STRESS, by Hubert Frings, Mable Frings and Alan Kivert. Pennsylvania State College, State College, Pa. Sep 1950. 28p photos, graphs, tables Mi $2.00, Ph $3.75. PB 101987

Mice of three strains (albino, C-57, and dba) were tested for susceptibility to audiogenic seizures over the age range 15 to 50 days. The sound stimulus was a 10 kc./sec. note at an average intensity of 99db. The seizure pattern and preseizure behavior of the mice are described in detail. There were few interstrain or sex differences in behavior or incidence of seizures. In general, C-57's seem least susceptible and dba's most susceptible, but great individual variation in susceptibility and pattern was found even within the same litter. Photographs, tables and graph included, bibliography attached. Contract no. AF 33 (038)-786. AAF TR 6028.

BIOCHEMICAL CHANGES OF RAT DURING EXPOSURE TO COLD, by Herman I. Chinn, Fred W. Oberst, Beverly Nyman, Kay Fenton. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. Sep 1950. 6p graphs, tables Mi $1.25, Ph $1.25. PB 102277

1. Rats maintained at 4°C, for a period of 10 days showed significant increases in the food intake and in urinary volume, creatinine, uric acid, chloride, potassium, and ascorbic acid. 2. There was an increased retention of sodium by the rat during cold exposure. 3. Young male adult human beings exposed to 5°C. for 2 hours daily for 8 days showed no change in reduced or total ascorbic acid excretion in the urine. 4. These results have been discussed in the light of the responses reported to occur after injection of adrenocorticotropin. Graphs and tables included, bibliography attached. AAF SAM Project 21-23-027.

COPPER MANIKIN REGIONAL HEAT LOSS AND COOLING CONSTANTS, by John F. Hall, Jr. U. S.

Air Materiel Command. Engineering Division. Aero-Medical Laboratory, Wright Field, Dayton, Ohio. Oct 1950. 13p drawings, graphs, tables Mi $1.75, Ph $2.50. PB 102046

Details of the experimental procedures, methods, and presentation of the data obtained is presented in tabular and graphic form. Conclusions are given. AAF TSEAA MR 696-105P.

DESTRUCTION OF THE PINNAE OF WHITE MICE BY HIGH INTENSITY AIR-BORNE SOUND, by Hubert Frings and Irma Senkovits. Pennsylvania State College, State College, Pa. Sep 1950. 28p photos Mi $2.00, Ph $3.75. PB 101988

The pinnae of white mice, when exposed to high intensity air-borne sound waves, exhibit an immediate inflammation followed by degeneration. Treated pinnae were compared histologically with normal pinnae, with pinnae treated with high temperatures, and with pinnae of mice which were depilated around the ears and treated with sound so that no heat could be produced by absorption of sound in the fur. The results showed that the major factor in destruction of the pinnae is heating in the fur, but some of the effects produced by sound are the results of mechanical agitation or a combination of heating and mechanical action. Photomicrographs included. Bibliography attached. Contract no. AF 33(038)-786. AAF TR 6029.

EFFECTS OF PROLONGED EXPOSURE TO COLD ON THE PLASMA PROTEIN-BOUND IODINE OF THE RAT, BY B. H. ERSHOFF AND O. J. GOLUB. U. S. QUARTERMASTER FOOD AND CONTAINER INSTITUTE. REPORT NO. 5 ON CONTRACT DA 11-183-QM-1278, JUN-JULY 1950. Jul 1950. 4p table Mi $1.25, Ph $1.25. PB 101810

1. Cold - Physiological effects 2. Thurston, Emory W., Laboratories, Los Angeles, Calif.

ELECTRODE PROBLEM IN ELECTROENCEPHALOGRAPHY DURING MOTION, by J. W. Prast. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. Sep 1950. 7p drawings, table Mi $1.25, Ph $1.25. PB 102404

Electrode types tested are given together with test procedures, followed by results and discussion. The results of the measurements are given in table I. Diagrams are included. Bibliography attached. Formerly Project 21-02-048. AAF SAM Project 21-38-001 Report no. 1.

MESSUNGEN UEBER DIE VARIATIONSBREITE DER SCHWELLENEMPFINDLICHKEIT DES MENSCHLICHEN AUGES FUER FOVEALES FARBSEHEN IM ROTEN (MEASUREMENTS ON THE LATITUDE OF VARIATION OF THE THRESHOLD SENSITIVITY OF THE HUMAN EYE FOR FOVEAL COLOR VISION IN THE RED REGION OF THE SPECTRUM), by Hermann Schaefer. Oct 1950. 22p drawings, graphs Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $.75. PB 102230

A investigations was made to determine the spectral course of the limen (threshold) sensitivity of the human eye in the red region of the spectrum and the adjacent infrared. An apparatus and a questioning procedure were developed which ensured elimination of various influences on the test method. The results indicated that the absolute sensitivity of the human eye for foveal color vision varies with different individuals. All persons tested showed, within the range of intensity if the just vanishing sensory impression, a "range of uncertainty" of finite latitude in which, upon the statistical examination, the number of cases of a sensory impression formed rises 0% at the lowest intensity to 100% at the highest intensity of that range. FIAT FR 1252.

SONIC AND ULTRASONIC EFFECTS ON MAZE LEARNING AND RETENTION IN THE ALBINO RAT, by P. F. Gilbert and G.C.V. Gawain. Pennsylvania State College, State College, Pa. Sep 1950. 59p photos, graphs, tables Mi $2.75, Ph $7.50. PB 101989

The discussion is divided into 4 parts: Part I. Introduction - (1) general problems (2) pilot studies (3) statement of the problem (4) acoustical apparatus and nature of sound field (5) experimental design (6) animals. Part II. Procedure - Outline of and detailed explanation of steps (1) motivation (2) randomization (3) recording data (4) 1st day (5) 2nd day (6) 3rd day. Part III. Results and discussion (1) tabulation of raw data (2) graphs (3) analysis of variance (4) correlations and coefficients of variation (5) effects of seizures (6) stereotyped behavior. Part IV. Summary and conclusions. Bibliography attached. Photographs, tables and graphs are included. Contract AF 33(038)-786. AAF TR 6030.

SURVEY OF HUMAN ADJUSTMENT PROBLEMS IN THE NORTHERN LATITUDES: MORALE SURVEY OF ALASKAN AIR COMMAND, by Ernest L. McCollum. U. S. Air Force. Arctic Aeromedical Laboratory, Ladd Air Force Base, Alaska. Aug 1950. 12p table Mi $1.75, Ph $2.50. PB 102402

The basic material for this study was collected by the use of an anonymous survey questionnaire upon which the air men registered their altitudes and feelings. The sampling totaled 2,637 airmen. Percentages for the various questions are given in appendix A. AAF AAL Project 21-01-022 Program C Part 1-C.

METALS AND METAL PRODUCTS

BESTÄNDIGKEIT VON HARTMETALLEGIERUNGEN GEGEN KONZENTRIERTER PHOSPHORSÄURE (RESISTANCE OF HARD METAL ALLOYS TO CONCENTRATED PHOSPHORIC ACID), by Dr. Dawihl. Studiengesellschaft Hartmetall, Berlin. May 1950. 3f (Text in German) Mi $1.25, Enl Pr $1.50. PB 102107

1. Alloys, Hard - Resistance - Germany 2. Phosphoric acid - Effect on metals - Germany 3. BIOS FR 925 LD 4. Micro BIOS HEC 11214 5. Micro BIOS FD 3831/47, Frames 1-2.

Abstract available as PB 102107s. 1p. Mi $1.25, Ph $1.25. Listed in BIOS FR 925 Appx. I, p. 20.

COMPARISON OF FATIGUE STRENGTHS OF BARE AND ALCLAD 24S-T3 ALUMINUM-ALLOY SHEET SPECIMENS TESTED AT 12 AND 1000 CYCLES PER MINUTE, by Frank C. Smith, William C. Brueggeman, and Richard H. Harwell. U. S. National Advisory Committee for Aeronautics. Dec 1950. 16p photo,

diagr, graphs, tables Mi $1.75, Ph $2.50.
PB 102489

Results are presented of tests on bare and alclad 24S-T3 aluminum-alloy specimens made at 12 and 1000 cycles per minute to determine effect of frequency of loading on fatigue strength. The number of cycles to failure varies from about 150 to over 10,000,000. Fatigue strengths of both materials were slightly lower at 12 cycles per minute, but a quantitative estimate of effect of low-frequency loading cannot be made because effects are small compared with observed scatter. NACA TN 2231.

DAUERSTANDFESTIGKEIT VON NICKEL-CHROM-KOBALT UND EISEN-CHROM-KOBALT-LEGIERUNGEN (CREEP STRENGTH OF NICKEL-CHROMIUM-COBALT AND IRON-CHROMIUM-COBALT ALLOYS), by Alfred Krisch. Kaiser Wilhelm Institut für Eisenforschung, Düsseldorf, Ger. 1944. 25f photos, graphs, tables (Text in German and English) Mi $2.00, Enl Pr $5.00. PB 102068

1. Nickel-chromium-cobalt alloys - Creep tests - Germany 2. Iron-chromium-cobalt alloys - Creep tests - Germany 3. BIOS FR 396 LD 4. Micro BIOS FD 4682/47, Frames 1-24.

Abstract available as PB 102068s. 1p. Mi $1.25, Ph $1.25. Listed in BIOS FR 396 appx. III.

EFFECT OF MILLING TIME ON THE PROPERTIES OF HARD METALS. Studiengesellschaft Hartmetall, Berlin. 1937-1938. 37f photos (Text in German and English) Mi $2.25, Enl Pr $6.25. PB 102259

1. Metals, Hard - Milling - Germany 2. Metals, Hard - Physical properties - Germany 3. Titanium carbides - Milling - Germany 4. Tungsten carbides - Milling - Germany 5. BIOS FR 925 LD 6. Micro BIOS HEC 11100 7. Micro BIOS HEC 11101 8. Micro BIOS HEC 11107 9. Micro BIOS HEC 11113 10. Micro BIOS HEC 11125 11. Micro BIOS HEC 11140 12. Micro BIOS FD 3788/47, Frames 1-27, 30-36.

Abstract available as PB 102259s. 2p. Mi $1.25, Ph $1.25. Listed in BIOS FR 925 appx. I, p. 10-12, 14 as HEC 11100-11101, 11107, 11113, 11125, 11140. English translation accompanies each report.

ENTWICKLING, EIGENSCHAFTEN, UND VERWENDUNG VON ZINKSPRITZGUSSLEGIERUNGEN (DEVELOPMENT, PROPERTIES AND USES OF ZINC DIE-CAST ALLOYS), by K. Löhberg. Metallgesellschaft A. G., Frankfort, Ger. Jun 1941. 19f (Text in German) Mi $1.75, Enl Pr $3.75. PB 102054

1. Zinc alloys - Properties - Germany 2. Zinc alloys - Uses - Germany 3. Micro BIOS FD 231/48, Frames 1-17.

Abstract available as PB 102054s. 1p. Mi $1.25, Ph $1.25.

EQUILIBRIUM CURRENTS INDUCED IN ZINCBLENDE BY ELECTRON BOMBARDMENT OF NEGATIVE ELECTRODE, by Merril F. Distad. U. S. Naval Research Laboratory. May 1950. 18p drawing, diagr, graphs Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $.50. PB 102304

The current induced in zincblende crystals when the negative electrode is bombarded by 5- to 900-volt electrons has been measured. The electrodes were evaporated copper films 0.02 or 0.05 micron thick. The experimentally observed ratio of the equilibrium bombardment-induced crystal current to the bombarding current: (a) had values ranging from about 10^{-5} to 10^{-9}; (b) was independent of the magnitude of the bombarding current; (c) was proportional to the bombarding voltage raised to the nth power, where n ranged from 2.0 to 2.6 for bombarding voltages up to 600 volts; (d) did not show a dependence on the crystal temperature; and (e) increased as the potential difference between the crystal electrodes was increased. NRL R 3675.

ERGEBNISSE DER UNTERSUCHUNG DES HARTMETALLS TITANIT (ANALYSIS OF "TITANIT" HARD METAL). Studiengesellschaft Hartmetall, Berlin. Apr 1932. 3f photos (Text in German) Mi $1.25, Enl Pr $1.50. PB 102078

1. Titanit (Trade name) 2. Metals, Hard - Physical properties - Germany 3. BIOS FR 925 LD 4. Micro BIOS HEC 11006 5. Micro BIOS FD 3722/47, Frames 1-2.

Abstract available as PB 102078s. 1p. Mi $1.25, Ph $1.25. Listed in BIOS FR 925 appx. I, p. 1.

EXAMINATION OF METAL SURFACES, IN PARTICULAR OF HYDRONALIUM, BY MEANS OF ELECTRON MICROSCOPE. I. G. Farbenindustrie A. G., Leverkusen, Ger. 1942-1943. 41f photos (Text in German) Mi $2.50, Enl Pr $7.50. PB 102093

1. Metal surfaces - Tests - Germany 2. Hydronalium - Tests - Germany 3. Microscopes, Electron - Germany 4. BIOS FR 1487 LD 5. Micro BIOS FD 2050/48, Frames 1-40.

Abstract available as PB 102093s. 1p. Mi $1.25, Ph $1.25. Includes reprint from Zeitschrift für Metallkunde no. 10, 1942 of article by Manfred von Ardenne and Heinrich Kircher entitled: Nachweis der Übereinstimmung des lichtmikroskopischen aufnahme einer abdruckfolie des gleichen objektausschnittes (Proof of the conformity of the optical microscope surface picture of a hydronalium test specimen with the electron microphotograph of an impression foil of the same specimen sector). Also includes two reports by Dr. Kircher on tests of metal surfaces under the electron microscope, which are listed in BIOS FR 1487 p. 19.

HERSTELLUNG VON HILFSMETALLFRIEM HARTMETALL DURCH GLEICHZEITIGE KARBURIERTUNG UND SINTERUNG (MANUFACTURE OF HARD METAL FREE FROM BINDER BY SIMULTANEOUS CARBURIZING AND SINTERING), by Dawihl. Studiengesellschaft Hartmetall, Berlin. Oct 1937. 4f (Text in German) Mi $1.25, Enl Pr $1.50. PB 102100

1. Metals, Hard - Manufacture - Germany 2. BIOS FR 925 LD 3. Micro BIOS HEC 11,118 4. Micro BIOS FD 3778/47, Frames 1-2.

Abstract available as PB 102100s. 1p. Mi $1.25, Ph $1.25. Listed in BIOS FR 925 appx. I, p. 12 as HEC 11,118.

INVESTIGATIONS TO EXPLAIN POROSITY AND THE TENDENCY TO SWELL IN HARD METALS, 1ST-5TH REPORTS. Studiengesellschaft Hartmetall, Berlin. Oct 1937-Oct 1938. 101f photos, tables (Text in German) Mi $4.50, Enl Pr $15.00. PB 102103

1. Metals, Hard - Porosity - Germany 2. Metals, Hard - Structure - Germany 3. Metals, Hard - Deformation - Germany 4. BIOS FR 925 LD 5. Micro BIOS HEC 11119 6. Micro BIOS HEC 11131

7. Micro BIOS HEC 11135 8. Micro BIOS HEC 11142 9. Micro BIOS HEC 11150 10. Micro BIOS FD 3792/47, Frames 1-99.

Abstract available as PB 102103s. 2p. Mi $1.25, Ph $1.25. Listed in BIOS FR 925 appx. I, p. 12-14.

MANGANLAGERSTÄTTEN IN MITTEL- UND SUDÖSTEUROPA (MANGANESE DEPOSITS AND SMELTING OF MANGANESE ORE IN MIDDLE AND SOUTHEAST EUROPE), by Helmut Schiele. Verein Deutscher Eisenhütten, Düsseldorf, Ger. 1944. 15f graphs (Text in German) Mi $1.75, Enl Pr $3.75. PB 102062

1. Manganese ore deposits - Europe 2. Manganese ores - Smelting - Germany 3. Micro BIOS FD 2005/48, Frames 1-14.

Abstract available as PB 102062s. 1p. Mi $1.25, Ph $1.25. Includes discussion of the report.

MANUFACTURE OF XX HARD METAL WITH UNGROUND TUNGSTEN CARBIDE, AND WITH ADDITION OF TANTALUM CARBIDE. Studiengesellschaft Hartmetall, Berlin. Oct 1937. 7f tables (Text in German) Mi $1.25, Enl Pr $2.50. PB 102099

1. Metals, Hard - Manufacture - Germany 2. Widia XX (Hard metal) 3. BIOS FR 925 LD 4. Micro BIOS HEC 11114 5. Micro BIOS HEC 11115 6. Micro BIOS FD 3775/47, Frames 1-5.

Abstract available as PB 102099s. 2p. Mi $1.25, Ph $1.25. Listed in BIOS FR 925 appx. I, p. 11.

METAL RECOVERY FROM LOW GRADE RAW MATERIALS. Duisburger Kupferhütte, Duisburg, Ger. Jun 1946. 8f diagr (Text in German and English) Mi $1.25, Enl Pr $2.50. PB 102070

1. Metals - Recovery - Germany 2. BIOS FR 1598 LD 3. Micro BIOS FD 4742/47, Frames 1-7.

Abstract available as PB 102070s. 1p. Mi $1.25, Ph $1.25. Listed in BIOS FR 1598, p. 31.

NEUE UNTERSCHUNGSMETHODEN UND NEUE ANSCHAUENGEN AUF DEM GEBIETE DER METALLKUNDE (NEW METHODS OF RESEARCH AND A NEW APPROACH TO THE PROBLEMS OF METALLURGY), by Dr. J. H. Kramer. Germany. Physikalisch-Technische Reichsanstalt. Oct 1945. 23f photos, graphs (Text in German) Mi $2.00, Enl Pr $5.00. PB 102202

1. Metallurgy - Research - Germany 2. Micro BIOS FD 2842/48, Frames 1-20.

Abstract available as PB 102202s. 2p. Mi $1.25, Ph $1.25.

NICHTEISENMETALLE ALS HILFSMITTEL FÜR DIE HARTMETALLHERSTELLUNG (NON-FERROUS METALS AS BINDERS IN HARD METAL MANUFACTURE). Osram G.m.b.H., Berlin. Jan 1932. 6f (Text in German) Mi $1.25, Enl Pr $2.50. PB 102077

1. Metals, Hard - Production - Germany 2. Metals - Binding agents - Germany 3. BIOS FR 925 LD 4. Micro BIOS HEC 11005 5. Micro BIOS FD 3721/47, Frames 1-4.

Abstract available as PB 102077s. 2p. Mi $1.25, Ph $1.25. Listed in BIOS FR 925 appx. I, p. 1.

PROPERTIES OF EVAPORATED GOLD AND TUNGSTEN OXIDES, by P. G. Wilkinson. U. S. Naval Research Laboratory. Aug 1950. 15p photos, graphs tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. Mimeo: $.50. PB 102175

Gold blacks prepared by evaporating gold from a tungsten filament in tank nitrogen at several mm pressure were found to contain tungsten oxides which greatly affected the optical and electrical properties. Deposits containing more than 0.5 mol percent of tungsten oxides were black and showed resistivities 10^3 to 10^8 times that of bulk gold. The resistivities of gold blacks increased on exposure to oxygen. Oxide-free deposits were yellow and possessed a low, stable resistivity, unaffected by exposure to oxygen. Exposure to air or oxygen caused an increase in the electrical resistance and optical transmission of films of tungsten dioxide and tungsten trioxide evaporated in high vacuum. NRL R 3712.

PROTECTIVE COATINGS ON METALS, A LITERATURE AND PATENT SURVEY, PREPARED by Francis D. Horigan and Cary R. Sage. U. S. Office of the Quartermaster General. Military Planning Division. Research and Development Laboratories. Technical Library. Oct 1950. 60p Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. Mimeo: $1.50. PB 102172

The literature survey presented in the following pages deals with protective coatings, with special emphasis being placed on corrosion protection. For didactic purposes, the compilation is divided into three parts: PART I deals with the metallic protection of light-metals and their alloys, particularly aluminum and magnesium; PART II (beginning with item 80) is concerned with the metallic protection of heavy metals, i.e. iron and steel; PART III (item 130 et seq.) relates to organic coatings which may be applied to both light and heavy metals. By and large, the scope of the present study is narrowed to cover only those treatments which are currently used. Consideration is given to preparatory cleansing, coating processes, application and difficulties encountered in application, together with methods evolved and suggestions for elimination of these difficulties. QMC TL BS 14.

RÖTGENOGRAPHISCHE UNTERSCHUNGEN VON HARTMETALL-PULVERPROBEN AUS DEM WIDIA-BETRIEB (X-RAY EXAMINATION OF HARD METAL POWDER SAMPLES FROM THE WIDIA WORKS), by Dawihl and Rix. Studiengesellschaft Hartmetall, Berlin. Jan 1938. 3f (Text in German) Mi $1.25, Enl Pr $1.50. PB 102075

1. Metal powders - X-ray tests - Germany 2. BIOS FR 925 LD 3. Micro BIOS HEC 11122 4. Micro BIOS FD 3779/47, Frames 1-3.

Listed in BIOS FR 925 appx. I, p. 12 as Report 65/349 (HEC 11122).

SHEET METAL TECHNIQUES, MODERN DEVELOPMENTS IN, II. U. S. Bureau of Ships. Oct 1950. 12p photos, drawings, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. Mimeo: $.25. PB 102424

1. Aluminum - Casting 2. Sheet metal - Manufacture 3. Dies, Blanking and piercing 4. Dies, Hard wood 5. Dies, Glass 6. Dies, Masonite 7. Dies, Plastic 8. Dies, Fiber 9. Dies, Cement 10. Dies, Zinc alloy 11. Dies, Rubber 12. NAVSHIPS IN 109.

For pt. I see PB 101973.

ÜBER DAS KRIECHVERHALTEN TECHNISCHER ZINKLEGIERUNGEN (CREEP BEHAVIOR OF TECHNICAL ZINC ALLOYS), by K. Löhberg. Metallgesellschaft A. G., Frankfort, Ger. Feb 1941. 22f photos, graphs (Text in German) Mi $2.00, Enl Pr $5.00. PB 102213

1. Zinc alloys - Creep tests - Germany 2. Micro BIOS FD 242/48, Frames 662-681.

Abstract available as PB 102213s. 1p. Mi $1.25, Ph $1.25.

UEBER DEN EISENGEHALT IM HARTMETALLPULVER (IRON CONTENT IN HARD METAL POWDERS), by Dr. Dawihl. Studiengesellschaft Hartmetall, Berlin. Jul 1937. 3f (Text in German) Mi $1.25, Enl Pr $1.50. PB 102258

1. Metal powders - Iron content - Germany 2. BIOS FR 925 LD 3. Micro BIOS HEC 11106 4. Micro BIOS FD 3772/47, Frames 1-3.

Abstract available as PB 102258s. 1p. Mi $1.25, Ph $1.25. Listed in BIOS FR 925 appx. I, p. 10 as Report 65/328 (HEC 11106).

ÜBER DEN METALLOGRAPHISCHEN NACHWEIS DES KOBALTS IM HARTMETALL (METALLOGRAPHIC DETECTION OF COBALT IN HARD METAL), by Flüshöh. Studiengesellschaft Hartmetall, Berlin. Jun 1937. 5f photos (Text in German) Mi $1.25, Enl Pr $1.50. PB 102098

1. Cobalt - Determination - Germany 2. Metals, Hard - Analysis - Germany 3. BIOS FR 925 LD 4. Micro BIOS HEC 11102 5. Micro BIOS FD 3769/47, Frames 1-4.

Abstract available as PB 102098s. 1p. Mi $1.25, Ph $1.25. Listed in BIOS FR 925 appx. I, p. 10.

ÜBER WEITERE VERBESSERUNGEN DER SCHUTZMASSNAHMEN IM HARTMETALLBETRIEB (FURTHER IMPROVEMENTS IN SAFETY MEASURES IN THE HARD METAL WORKS). Studiengesellschaft Hartmetall, Berlin. Jun 1937. 3f (Text in German) Mi $1.25, Enl Pr $1.50. PB 102074

1. Metal industries - Safety precautions - Germany 2. Safety devices and measures - Germany 3. BIOS FR 925 LD 4. Micro BIOS HEC 11103 5. Micro BIOS FD 3770/47, Frames 1-3.

Listed in BIOS FR 925 appx. I, p. 10 as Report 65/324 (HEC 11103).

DAS VERHALTEN VON HARTMETALLEN GEGEN DIE EINWERKUNG VERDÜNNTER SALZSÄURE (BEHAVIOR OF HARD METAL TOWARD THE ACTION OF DILUTE HYDROCHLORIC ACID); UEBER DEN SINTERUNGSBEGINN BEI HARTMETALLPULVERN (COMMENCEMENT OF SINTERING IN HARD METAL POWDER). Studiengesellschaft Hartmetall, Berlin. 1938. 12f tables (Text in German) Mi $1.75, Enl Pr $3.75. PB 102260

1. Metals, Hard - Effect of hydrochloric acid - Germany 2. Metal powders - Sintering - Germany 3. Hydrochloric acid - Reactions - Germany 4. BIOS FR 925 LD 5. Micro BIOS HEC 11127 6. Micro BIOS HEC 11141 7. Micro BIOS FD 3789/47, Frames 1-10.

Abstract available as PB 102260s. 2p. Mi $1.25, Ph $1.25. Listed in BIOS FR 925 appx. I, p. 12 and 14 as HEC 11127 and 11141.

VERSUCHE ZUR ERMITTLUNG DES GEFÜGES VON GESINTERTEM KOBALT (DETERMINATION OF THE STRUCTURE OF SINTERED COBALT); ÜBER VERÄNDERUNGEN DER OBERFLÄCHE GESCHLIFFENER HARTMETALLSCHNEIDPLÄTTCHEN (SURFACE CHANGES OF GROUND HARD METAL PLATES). Studiengesellschaft Hartmetall, Berlin. Feb 1938. 17f photos (Text in German) Mi $1.75, Enl Pr $3.75. PB 102102

1. Cobalt - Structure - Germany 2. BIOS FR 925 LD 3. Micro BIOS HEC 11126 4. Micro BIOS HEC 11128 5. Micro BIOS FD 3781/47, Frames 1-15.

Abstract available as PB 102102s. 2p. Mi $1.25, Ph $1.25. Listed in BIOS FR 925 appx. I, p. 12.

VERSUCHE ZUR HERSTELLUNG EINES HARTMETALLS ZUM ERSATZ DES WIDIA X (EXPERIMENTS ON PRODUCING A HARD METAL AS SUBSTITUTE FOR WIDIA X). Studiengesellschaft Hartmetall, Berlin. May 1932. 4f (Text in German) Mi $1.25, Enl Pr $1.50. PB 102079

1. Widia X (Trade name) 2. Alloys, Hard - Tests - Germany 3. BIOS FR 925 LD 4. Micro BIOS HEC 11008 5. Micro BIOS FD 3724/47, Frames 1-3.

Abstract available as PB 102079s. 1p. Mi $1.25, Ph $1.25. Listed in BIOS FR 925 appx. I, p. 1.

VERSUCHE ZUR KLÄRUNG DER FRAGE, WODURCH DIE SPEZIFISCHE LEISTUNG TITANHALTIGER HARTMETALLE AM STAHL BEDINGTIST (INVESTIGATION INTO THE CAUSES FOR THE PARTICULAR STEEL-CUTTING PERFORMANCE OF HARD METALS CONTAINING TITANIUM), by Dorn. Osram G.m.b.H., Berlin. May 1932. 4f (Text in German) Mi $1.25, Enl Pr $1.50. PB 102065

1. Titanium carbides - Cutting properties - Germany 2. BIOS FR 925 LD 3. Micro BIOS HEC 11007 4. Micro BIOS FD 3723/47, Frames 1-3.

Abstract available as PB 102065s. 1p. Mi $1.25, Ph $1.25. Aktennotis 65/207. Listed in BIOS FR 925 appx. I, p. 1 as HEC 11007.

ZUG-DRUCK DAUERVERSUCHE AN STAHL BEI HÖHEREN TEMPERATUREN UND IHRE AUSWERTUNG NACH VERSCHIEDENEN VERFAHREN (LONG TERM TENSILE AND COMPRESSION TESTS ON STEEL AT HIGH TEMPERATURES AND THEIR EVALUATION BY VARIOUS PROCESSES); EINFLUSS DER STRECKGRENZE AUF DIE BIEGEWECHSELFESTIGKEIT VON STAHL (INFLUENCE OF THE YIELD LIMIT ON THE ALTERNATE BENDING STRENGTH OF STEEL), by Max Hempel and Hermann Krug. Kaiser Wilhelm Institut für Eisenforschung, Düsseldorf, Ger. 1942. 35f photos, graphs (Text in German) Mi $2.25, Enl Pr $6.25. PB 102265

1. Steel - Compression tests - Germany 2. Steel - Ductility tests - Germany 3. Steel - Tensile tests - Germany 4. Steel - Creep tests - Germany 5. BIOS FR 396 LD 6. Micro BIOS FD 4683/47, Frames 1-33.

Abstract available as PB 102265s. 2p. Mi $1.25, Ph $1.25. Listed in BIOS FR 396 appx. 3, item 23.

ZUSAMMENSTELLUNG DER BISHER DURCHGEFÜHRTEN UNTERSUCHUNGEN ÜBER DAS SYSTEM WOLFRAMKARBID-KOBALT (REVIEW OF PREVIOUS INVESTIGATIONS OF THE SYSTEM TUNGSTEN CARBIDE-COBALT), by Dr. Dawihl. Studiengesellschaft Hartmetall, Berlin. Jun 1937. 7f (Text in German) Mi $1.25, Enl Pr $2.50. PB 102097

1. Tungsten carbide-cobalt alloys - Germany 2. BIOS FR 925 LD 3. Micro BIOS HEC 11096

4. Micro BIOS FD 3768/47, Frames 1-6.
Abstract available as PB 102097s. 1p. Mi $1.25, Ph $1.25. Listed in BIOS FR 925 appx. I, p. 10.

MINERALS AND MINERAL PRODUCTS

ANALYSIS OF CONCRETES, by S. R. Bowden and E. H. Green. Gt. Brit. Dept. of Scientific and Industrial Research. Building Research Station, Watford, England. Jul 1950. 20p Available from British Information Services, 30 Rockeleller Plaza, New York 20, N. Y. $.25. PB 102441
1. Concrete - Analysis - Gt. Brit. 2. Gt. Brit. Dept. of Scientific and Industrial Research. Road Research Laboratory, Harmondsworth, England 3. DSIR NB TP 8.
S.O. Code no. 47-551-8.

DECOLORISING CLAY ABSORBENTS "TONSIL OPTIMUM" AND "TERRANA EXTRA". Süd-Chemie A. G., Munich, Ger. Mar 1948. 5f photos, graph Mi $1.25, Enl Pr $1.50. PB 102155
1. Absorbents - Germany 2. Tonsil optimum (Trade name) 3. Terrana extra (Trade name) 4. Micro BIOS FD 1504/48, Frames 1-4.
Abstract available as PB 102155s. 1p. Mi $1.25, Ph $1.25. Testing and analysis of these samples was carried out in supplement to FIAT FR 810.

EINFLUSS DER WARMBEHANDLUNG AUF DIE WECHSELFESTIGKEIT VON VEREDELTEN UND UNVEREDELTEN SILUMIN (INFLUENCE OF HEAT TREATMENT ON THE FATIGUE STRENGTH OF REFINED AND UNREFINED SILUMIN), by G. Gürtler and W. Jung-König. Metallgesellschaft A.G., Frankfort, Ger. n.d. 17f photos, graphs, tables (Text in German) Mi $1.75, Enl Pr $3.75. PB 102268
1. Silumin - Fatigue tests - Germany 2. Silumin - Thermodynamic - Germany 3. BIOS HEC 12100 4. Micro BIOS FD 4874/47, Frames 242-256.

FINE CERAMICS INDUSTRY IN GERMANY DURING THE PERIOD 1939-1945, by D. A. Holdridge. British Intelligence Objectives Subcommittee. 1950. 143p maps, diagrs, graphs, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $.90. PB 102302
1. Ceramic industries - Germany 2. BIOS OR 28. British Ceramic Research Association. Special publication no. 3.

INVESTIGATION INTO THE CEMENT INDUSTRY, by A. J. Norval, P. L. Kriek, A. A. Moore, S. Viljoen, Harry A. Levy. Union of South Africa. Board of Trade and Industries. Feb 1947. 91p tables, (part fold) Mi $4.25, Ph $12.50. PB 102121
1. Cement industry - Union of South Africa. Report no. 295.

PLANT FOR PRESTRESSING CONCRETE. SOME NEW APPLIANCES DEVELOPED BY THE FIELD TEST UNIT OF THE MINISTRY OF WORKS. Gt. Brit. Ministry of Works. 1950. 21p photos Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.35. PB 102008
1. Concrete, Prestressed - Gt. Brit. 2. DSIR NB B 12.

PLASTERS USED IN BUILDING: GYPSUM AND ANHYDRITE. Gt. Brit. Ministry of Works. n.d. 7p tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.05. PB 102019
1. Anhydrite - Derivatives - Production 2. Gypsum - Derivatives - Production 3. Plaster, Anhydrite 4. Plaster, Gypsum 5. Buildings - Plaster 6. MOW AL 2.

ZUR REGENERIERUNG VON BLEICHERDEN (REGENERATION OF FULLERS' EARTH), by Dr. Hofmann. Rhenania-Ossag Mineralölwerke A. G., Hamburg, Ger. 1941. 36f tables (Text in German) Mi $2.25, Enl Pr $6.25. PB 102223
1. Fullers' earth - Regeneration - Germany 2. Micro BIOS FD 2874/46, Item 18, Frames 684-702 3. Micro BIOS FD 2874/46, Item 18, Frames 799-814.
Abstract available as PB 102223s. 2p. Mi $1.25, Ph $1.25. Reports 7/41 and 20/41.

ÜBER DIE SPEKTRALANALYSE VON SILUMIN (SPECTROGRAPHIC ANALYSIS OF SILUMIN), by F. Wolbank and G. Lueg. Metallgesellschaft A. G., Frankfort, Ger. Jul 1938-Mar 1941. 43f photos, diagr, graphs, tables (Text in German) Mi $2.50, Enl Pr $7.50. PB 102267
1. Silumin - Spectrographic analysis - Germany 2. Micro BIOS HEC 12083 3. Micro BIOS HEC 12223 4. Micro BIOS FD 4859/47, Frames 770-781 5. Micro BIOS FD 4859/47, Frames 972-1000.

WEATHERING, PRESERVATION AND MAINTENANCE OF NATURAL STONE MASONRY (PT. II). Gt. Brit. Dept. of Scientific and Industrial Research. Building Research Station, Watford, England. Aug 1950. 8p Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.05. PB 102120
This note deals with the weathering of building stone as affected by frost, thermal expansion and corrosion, vegetation, bacteria and staining and discusses matters that arise in connection with the maintenance of stone masonry. S.O. Code no. 72-22-0-21. For part I see PB 101449. DSIR BRD 21.

PACKING AND PACKAGING

BASIC DESIGN DATA FOR THE USE OF FIBERBOARD IN SHIPPING CONTAINERS, BY T. A. CARLSON, K. Q. KELLICUTT, E. F. LANDT. U.S. QUARTERMASTER FOOD AND CONTAINER INSTITUTE. CONTRACT 49-106-1033-50. Jul 1950. 5p Mi $1.25, Ph $1.25. PB 101966
1. Containers, Fiber 2. Fiberboard - Tests 3. U. S. Forest Products Laboratory, Madison, Wis. 4. QMC FCI Contract 49-106-1033-50 Report 13.

OPERATIONAL SUITABILITY TEST OF BAG, CLOTHING, FIGHTER PILOT. FINAL REPORT, by Gifford M. Holden and Myron M. Hnatio. U. S. Air Proving Ground, Elgin Air Force Base, Florida.

Sep 1950. 18p photos Mi $1.75, Ph $2.50.
PB 102045

The report indicates the bag, fabricated from 10-oz. vinyl-coated duck with a tab type slide fastener, will not hold sufficient clothing for the purpose for which it was designed and that the size is not necessarily the critical size for such a bag. It is recommended that consideration of this type of bag be continued and that consideration be given to development of a bag similar to the Case-Bombardier's, Type E-1, for use by fighter pilots on short cross-country flights. Photographs attached. APGC Proj APG/TAB/13-A.

PACKAGING IN GERMANY DURING THE PERIOD 1939-1945, by Miss A. E. Wiegand. British Intelligence Objectives SubCommittee. 1950. 69p photos Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $.50.
PB 102275

1. Packaging - Germany 2. BIOS OR 31.

PHYSICS

General

DETERMINATION OF HEAT TRANSFER COEFFICIENTS DURING HIGH SPEED FLIGHT, by John L. Beal. Cornell Aeronautical Laboratory, Inc., Buffalo, N. Y. Apr 1949. 29p diagrs, tables, graphs Mi $2.00, Ph $3.75. PB 102002

The problem of determining heat transfer coefficients during high speed flight was studied. The preliminary examination was confined to a study of the basic elements of the devices whose temperatures would be used to determine heat flow and recovery factors. Particular attention was given to heat meters, since they constitute a well known method for measuring heat flow. It was found that the importance of rate of change of air temperature and flight velocity appears to be great. Rapidly changing conditions necessitate that the measuring instruments come to equilibrium with their surroundings very rapidly or else their readings must be interpreted on the basis of their transient response. Heat meters that will come to within 1% of their equilibrium reading in a few seconds after a sudden change in external conditions can readily be built. Report HF-601-M.

DYNAMICS OF FREE TURBULENCE, by Thomas Baron. Illinois. University. Engineering Experiment Station, Urbana, Ill. Nov 1948. 31p graphs Mi $2.25, Ph $5.00. PB 102001

The analogies between the processes of momentum, mass, and heat transfer are examined from a fundamental point of view. In problems of transport in fluids in free turbulence it is necessary to solve the differential equations of motion, mass transfer, and heat transfer. Solutions consistent with experimental data are derived for point sources and these are extended by generalization to sources of finite size. The application of the results to mixing problems should prove valuable in the design of entrainers and high velocity combustion chambers. Technical report no. 1. Contract N6-ori-71, Task order XI.

HEAT TRANSFER TO BODIES TRAVELING AT HIGH SPEED IN THE UPPER ATMOSPHERE, by Jackson R. Stalder and David Jukoff. U. S. National Advisory Committee for Aeronautics. 1949. 16p diagr, graphs Available from Supt. of Documents, U. S. Government Printing Office, Washington 25, D. C. $.15. PB 101968

A general method has been developed, using the methods of kinetic theory, whereby the surface temperatures of bodies can be calculated for steady flight at any speed in a rarefied gas. The particular solution was made for a flat plate; however, the calculations can be easily extended to bodies of arbitrary shape. NACA Report 944.

LAMINAR MIXING OF A COMPRESSIBLE FLUID, by Dean R. Chapman. U. S. National Advisory Committee for Aeronautics. Jan 1949. 10p graphs Available from Supt. of Documents, U. S. Government Printing Office, Washington 25, D. C. $.15.
PB 102413

A theoretical investigation of the velocity profiles for laminar mixing of a high-velocity stream with a region of fluid at rest has been made assuming that the Prandtl number is unity. A method which involves only quadratures is presented for calculating the velocity profile in the mixing layer for an arbitrary value of the free-stream Mach number. Detailed velocity profiles have been calculated for free-stream Mach numbers of 0, 1, 2, 3, and 5. For each Mach number, velocity profiles are presented for both a linear and a 0.76-power variation of viscosity with absolute temperature. Orginally appeared as Appendix B of a thesis "Base pressure at supersonic velocities" submitted to California Institute of Technology Jun 1948. Cover date is 1950. NACA Report 958.

ONE-DIMENSIONAL FLOWS OF AN IMPERFECT DIATOMIC GAS, by A. J. Eggers, Jr. U. S. National Advisory Committee for Aeronautics. Dec 1948. 15p graphs Available from Supt. of Documents, U. S. Government Printing Office, Washington 25, D. C. $.15. PB 102416

With the assumptions that Berthelot's equation of state accounts for molecular size and intermolecular force effects, and that changes in the vibrational heat capacities are given by a Planck term, expressions are developed for analyzing one-dimensional flows of a diatomic gas. The special cases of flow through normal and oblique shocks in free air at sea level are investigated. The effects of gaseous imperfections on oblique shock flows are studied from the standpoint of their influence on the lift and pressure drag of a flat plate operating at Mach numbers of 10 and 20. Cover date is 1950. NACA Report 959.

PHYSICS OF THE ELECTRON SHELLS. TRANSLATED, EDITED AND PUBLISHED IN COOPERATION WITH THE OFFICE OF TECHNICAL SERVICES, DEPT. OF COMMERCE, BY THE O.W. LEIBIGER RESEARCH LABORATORIES, INC., PETERSBURG, N. Y., by Hans Kopfermann and others. Oct 1950. 176p Available from O. W. Leibiger Research Laboratories, Inc., Petersburg, N. Y. $5.30. PB 85023t

American FIAT Review of German science, 1939-1946, v. 12. Translation of PB 85023.

SYMPOSIUM ON ORDNANCE AEROBALLISTICS, JUN 28, 1949. U. S. Naval Ordnance Laboratory. Mar 1950. 67p photos, diagrs, graphs Mi $3.00, Ph $9.75. PB 101765

1. Ballistics, Exterior - Research 2. Ballistics, Exterior - Ordnance 3. Aeromechanics - Research 4. Wind tunnels, Supersonic - Research 5. Aerodynamics, Supersonic - Research 6. American Physical Society. Fluid Dynamics Division 7. NOLR 1131.

See also PB 101764; PB 101766-PB 101770.

SYMPOSIUM ON THEORETICAL COMPRESSIBLE FLOW, JUN 28, 1949. U. S. Naval Ordnance Laboratory. Jul 1950. 92p diagrs Mi $4.25, Ph $12.50. PB 101766

1. Ballistics, Exterior - Research 2. Aeromechanics - Research 3. Wind tunnels, Supersonic - Research 4. Aerodynamics, Supersonic - Research 5. Flow, Compressible - Theory 6. American Physical Society. Fluid Dynamics Division 7. NOLR 1132.

See also PB 101764 - PB 101765; PB 101767 - PB 101770.

TURBULENZ BEI WÄRMESCHICHTUNG (TURBULENCE AND HEAT STRATIFICATION), by H. Schlichting. Oct 1950. 55p graphs Mi $2.75, Ph $7.50. PB 101984

With applications to meteorology in view, the method of small oscillations is used to investigate the stability of a plane laminar boundary layer in which the density depends in a special way on the distance from the plate. It is found that for a constant Froude number the flow becomes more stable as the Richardson number increases until, at a critical value of the Richardson number that depends on the Froude number, the flow is stable for all disturbance wave lengths and Reynolds numbers. The calculated results are verified by experiment. Translation from Zeitschrift für angewandte mathematik und mechanik, Band 15, Heft 6, December 1935, pp. 313-338. Lecture presented at the fourth international Mechanics Conference held at Cambridge, England, from July 3 to July 9, 1934. NACA TM 1262.

Nuclear

ANGULAR DISTRIBUTION OF THE SCATTERING OF SLOW NEUTRONS BY DEUTERIUM GAS, by J. A. Spiers. National Research Council of Canada. Atomic Energy Project. Apr 1949. 52p diagrs, graphs Mi $2.75, Ph $7.50. Also available from National Research Council of Canada. Atomic Energy Project, Chalk River, Ont. $.25. PB 102171

The object of the present paper is to derive an expression for the differential cross-section, referred to axes at rest in the laboratory, for the scattering of a beam of monokinetic neutrons of known energy by deuterium gas at a known temperature. The effect on the angular distribution of the thermal velocities of the molecules before collision is accurately taken into account in this expression. This calculation is given in Section A. With suitable changes the method would be applicable to correcting the angular distribution of any scattering process for thermal velocities of the scatterers. The computed results are stated in terms of a $_{1/2}$ and a $_{3/2}$, the scattering lengths for the doublet and quaduplet states of neutron-deuteron interaction respectively (See Graph VII). It is hoped that, by comparison with the angular distribution measured experimentally, possible values of the ratio of these quantities may be determined; a way of performing this comparison is suggested in Section B. It is also shown in Section B that the presence of molecules in initial para states is necessary to make the determination of the ratio feasible. A comparison of the computed results with those obtained on a "Semi-Classical" picture of the scattering process is given and discussed in Section C. NRCC AEP CRTec 417. NRCC 1940.

DIRECTIONAL EFFECTS IN RADIOACTIVITY, by J. A. Spiers. National Research Council of Canada. Atomic Energy Project. Apr 1949. 94p diagrs, tables Mi $4.25, Ph $12.50. Also available from National Research Council of Canada. Atomic Energy Project, Chalk River, Ont. $.25. PB 102170

1. Neutrons - Directional properties - Canada 2. Radioactivity - Directional properties - Canada 3. Atomic power - Research - Canada 4. NRCC 1925.

INFLUENCE OF A SMALL BLACK CYLINDER UPON THE NEUTRON DENSITY IN AN INFINITE NON-CAPTURING MEDIUM, by W. P. Seidel, B. Davison and S. Kushneriuk. National Research Council of Canada. Atomic Energy Project. Feb 1946. 76p Mi $3.50, Ph $10.00. Also available from National Research Council of Canada. Atomic Energy Project, Chalk River, Ont. $.25. PB 102169

In the present report we examine the neutron density in a uniform non-capturing medium surrounding a long black cylinder of a small radius, in the case where the density depends only upon the distance from the cylinder. The linear extrapolation length for the asymptotic solution for the density in the surrounding medium is determined and expressed in terms of the radius of the cylinder. The method used can be treated as the iteration method, with the zero approximation corresponding to the case when the cylinder has zero radius. Issued Montreal Laboratory Feb 1946, Re-issued Chalk River, Oct 1948. NRCC AEP MT 207. NRCC 1868.

RUBBER AND RUBBER PRODUCTS

ABBAUVERSUCHE VON BUNA S UNTER-AUSSCHLUSS VON SAUERSTOFF (EXPERIMENTS ON THE DEGRADATION OF BUNA S WITHOUT THE USE OF OXYGEN), by Dr. E. Zaucker. I. G. Farbenindustrie A. G., Schkopau, Ger. Mar 1939. 4f (Text in German) Mi $1.25, Enl Pr $1.50. PB 102226

1. Buna S (Trade name) 2. Rubber, Buna - Degradation - Germany 3. Micro BIOS FD 2884/48, Frames 1-3.

Abstract available as PB 102226s. 1p. Mi $1.25, Ph $1.25.

ANREGUNG DER EMULSIONSPOLYMERISATION DES BUTADIENS DURCH EINSTRAHLEN VON KURZWELLIGEM LICHT (ACTIVATION OF THE EMULSION POLYMERIZATION OF BUTADIENE BY SHORT-WAVE IRRADIATION), by Dr. Schneider. I. G. Farbenindustrie A. G., Leverkusen, Ger.

Jul 1944. 8f graphs, tables (Text in German) Mi $1.25, Enl Pr $2.50. PB 102071

1. Butadiene - Polymerization - Germany 2. Ultraviolet radiation - Effects on polymerization - Germany 3. KAUTEKO (Anwendungstechnische Kommission für Kautschuk) 4. Micro BIOS FD 1408/48, Frames 1-6.

Abstract available as PB 102071s. 2p. Mi $1.25, Ph $1.25. Report to Kauko Jul 31, 1944.

DETERMINATION OF THE STABILITY OF IGELIT STABILIZERS AND CLEARING AGENTS FOR IGELIT PCU. I. G. Farbenindustrie A. S., Schkopau, Ger. 1940-1944. 19f graphs, tables (Text in German) Mi $1.75, Enl Pr $3.75. PB 102134

1. Igelit PCU (Trade name) 2. Polyvinyl chloride, Unchlorinated - Stability - Germany 3. Stability - Calculations - Germany 4. Micro BIOS FD 2319/47, Frames 1-17.

Abstract available as PB 102134s. 2p. Mi $1.25, Ph $1.25.

EIN- UND MEHRSTOFF POLYMERISATE VON BUTADIEN UND ISOPREN (SINGLE AND MIXED POLYMERIZATION PRODUCTS OF BUTADIENE AND ISOPRENE), by Dr. Daniel. I. G. Farbenindustrie A. G., Oppau, Ger. Feb 1943. 20f photo (Text in German) Mi $1.75, Enl Pr $3.75. PB 102217

1. Butadiene - Polymerization products - Germany 2. Isoprene - Polymerization products - Germany 3. Polymerization products - Germany 4. KAUTEKO (Anwendungstechnische Kommission für Kautschuk) 5. Micro BIOS FD 1361/48, Frames 1-18.

Abstract available as PB 102217s. 2p. Mi $1.25, Ph $1.25. Paper presented to Scientific Rubber Conference Feb 11, 1943.

ESTERS OF THIOETHERDICARBOXYLIC ACIDS, PLASTICIZER WE NR. 537 FOR IGELIT PUC (P.V.C.) by Dr. Weinbrunner and Löffler. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. Sep 1942-Jun 1943. 43f (Text in German) Mi $2.50, Enl Pr $7.50. PB 102059

1. Acids, Dicarboxylic - Esters - Germany 2. Plasticizer WE 537 (Trade name) 3. Plasticizers - Research - Germany 4. Kuteko (Kunstoff-Technische Kommission) 5. Micro BIOS FD 1738/48, Frames 1-41.

Abstract available as PB 102059s. 2p. Mi $1.25, Ph $1.25.

EVALUATION OF EXPERIMENTAL POLYMERS PRODUCED BY THE OFFICE OF RUBBER RESERVE. E. R. BARTHOLOMEW, PROJECT ENGINEER. U. S. Air Materiel Command, Wright Field, Dayton, Ohio. Oct 1949. 21p graphs, tables Mi $2.00, Ph $3.75. PB 102184

New experimental synthetic-rubber polymers were evaluated, with emphasis placed on the fuel-resistance and low-temperature characteristics. In general, the results indicate that a slight improvement may be obtained over commercially available polymers. The new polymers were superior in low-temperature characteristics. Slight trends were observed in fuel-resistance characteristics, but further development work is necessary to obtain satisfactory polymers for use where this property is required. Data are presented showing the effect of cure on volume change and low-temperature characteristics, tensile strength, shore hardness, resilience and elongation, as well as hardness at reduced temperature. AAF TR 5933.

IGELIT PCU PASTE FOR THE MANUFACTURE OF SHOE SOLES, PROCESSED ACCORDING TO THE IMPACT MOULDING METHOD. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. 1941. 19f photos, drawing (Text in German) Mi $1.75, Enl Pr $3.75. PB 102158

1. Igelit PCU paste (Trade name) 2. Soles, Rubber - Manufacture - Germany 3. Micro BIOS FD 1900/48, Frames 1-18.

Abstract available as PB 102158s. 1p. Mi $1.25, Ph $1.25.

IGELIT PCU PASTES S3, S8, S20, G, S. EL, and GS. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. 1938-1942. 27f tables (Text in German) Mi $2.00, Enl Pr $5.00. PB 102157

1. S3 (Igelit PCU paste) 2. S8 (Igelit PCU paste) 3. S20 (Igelit PCU paste) 4. G (Igelit PCU paste) 5. S (Igelit PCU paste) 6. EL (Igelit PCU paste) 7. GS (Igelit PCU paste) 8. Igelit PCU paste (Trade name) 9. Coatings, Rubber - Germany 10. Plasticizers - Production - Germany 11. Micro BIOS FD 1893/48, Frames 1-25.

Abstract available as PB 102157s. 2p. Mi $1.25, Ph $1.25.

IGELIT PCU TYPE H, A POLYVINYLCHLORIDE OF A VERY HIGH DEGREE OF POLYMERIZATION. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. 1941-1943. 94f photos, tables (Text in German) Mi $4.25, Enl Pr $13.75. PB 102156

1. Igelit PCU H (Trade name) 2. Polyvinyl chloride - Production - Germany 3. Micro BIOS FD 1627/48, Frames 1-91.

Abstract available as PB 102156s. 2p. Mi $1.25, Ph $1.25.

INFORMATION ON MANUFACTURE OF IGELIT PCU, ON AUXILIARY PRODUCTS, ON NEW APPLICATIONS FOR IGELIT, AND ON THE USE OF IGELIT WASTE MATERIALS. I. G. Farbenindustrie A. G., Schkopau, Ger. 1942-1944. 62f graphs (Text in German) Mi $3.00, Enl Pr $10.00. PB 102145

1. Igelit PCU (Trade name) 2. Polyvinyl chloride, Unchlorinated - Production - Germany 3. Polyvinylchloride, Unchlorinated - Waste products - Uses - Germany 4. KUTEKO (Kunstoff-Technische Kommission) 5. Micro BIOS FD 2290/47, Frames 1-68.

Abstract available as PB 102145s. 4p. Mi $1.25, Ph $1.25. Minutes of meetings of the Kuteko, Dec 1942, May and Nov 1944.

INSTRUCTIONS FOR THE PREPARATION OF SAMPLES FOR TESTING BUNA BATCHES, by Gomille. I. G. Farbenindustrie A. G., Schkopau, Ger. Jun 1944. 6f (Text in German) Mi $1.25, Enl Pr $2.50. PB 102138

1. Rubber, Buna - Tests - Germany 2. Micro BIOS FD 2373/47, Frames 1-5.

Abstract available as PB 102138s. 1p. Mi $1.25, Ph $1.25.

INVESTIGATION OF XANTHATE ACCELERATORS IN NATURAL RUBBER LATEX, by Karl F. Cullison. Jun 1947. 78p diagrs, tables Mi $3.50, Ph $10.00. PB 102131

Effects are presented of 22 xanthates, prepared from various alcohols, on the vulcanization of rubber latex using the anode coagulating dip. Isopropyl derivative was used to determine the correct ratio of sulfur, zinc oxide, and accelerator and to find the effect of calcium and zinc coagulants. Five air cures were made and stress-strain results are presented which determine the state of cure to obtain data regarding water-soluble accelerators used in latex. Thesis-University of Akron, Akron, Ohio.

PRACTICAL ASPECTS OF THE DESIGN OF STRUCTURAL RUBBER PRODUCTS, by Edward E. Blaurock. Dec 1946. 27p drawings, tables Mi $2.00, Ph $3.75. PB 102129

Various problems in molding technique are discussed with emphasis on tolerance, adhesion, and design. Bonding of rubber to a wide range of steels, brasses, bronzes, and aluminum alloy is possible. Production limits must be recognized in designing a part as to size, weight, and shape. There are design factors and practices which will produce a high quality bond and extended life. Spring rate or load-deflection tolerances and protective coatings for rubber are discussed. Paper no. 46-A-70 presented to annual meeting of the American Society of Mechanical Engineers Dec. 2-6, 1946.

REGELUNG DER BUNA S POLYMERISATION DURCH XANTHOGENATE (REGULATION OF THE POLYMERIZATION OF BUNA S BY MEANS OF XANTHATES), by E. Zaucker. I. G. Farbenindustrie A. G., Schkopau, Ger. May 1944. 9f graphs, tables (Text in German) Mi $1.25, Enl Pr $2.50. PB 102219

1. Polymerization - Regulators - Germany 2. Rubber - Polymerization - Germany 3. Xanthates - Use as polymerization regulators - Germany 4. KAUTEKO (Anwendungstechnische Kommission für Kautschuk) 5. Micro BIOS FD 1394/48, Frames 1-7.

Abstract available as PB 102219s. 2p. Mi $1.25, Ph $1.25. Paper presented to Scientific Rubber Conference, Jul 31, 1944.

REGELUNG UND BESCHLEUNIGUNG BEI DER PERBUNAN-POLYMERISATION (REGULATION AND ACCELERATION IN THE POLYMERIZATION OF PERBUNAN), by Dr. Falk. I. G. Farbenindustrie A. G., Leverkusen, Ger. Jul 1944. 14f graphs, tables (Text in German) Mi $1.75, Enl Pr $3.75. PB 102221

1. Polymerization - Regulators - Germany 2. Polymerization - Acceleration - Germany 3. Rubber, Synthetic - Polymerization regulators - Germany 4. Perbunan (Trade name) 5. KAUTEKO (Anwendungstechnische Kommission für Kautschuk) 6. Micro BIOS FD 1404/48, Frames 1-12.

Abstract available as PB 102221s. 2p. Mi $1.25, Ph $1.25. Paper presented to Scientific Rubber Conference July 31, 1944.

REPORTS AND CORRESPONDENCE RELATING TO "BUNA WERK IV AT AUSCHWITZ.". I. G. Farbenindustrie A. G., Ludwigshafen, Ger. 1940-1943. 615f maps, diagrs (Text in German) Mi $9.00, Enl Pr $81.25. PB 101917

1. Rubber, Buna - Production - Germany 2. Isoprene - Synthesis - Germany 3. Micro BIOS FD 1485/49, Frames 1-615.

Abstract available as PB 101917s. 1p. Mi $1.25, Ph $1.25.

REPORTS, CURVES AND DIAGRAMS RELATING TO COMPARATIVE TESTS OF BATCHES OF BUNA S FROM SCHKOPAU AND FROM HÜLS. I. G. Farbenindustrie A. G., Schkopau, Ger. 1941. 127f photos, diagrs, graphs, tables (Text in German) Mi $5.00, Enl Pr $17.50. PB 102161

1. Buna S (Trade name) 2. Rubber, Buna - Tests - Germany 3. Micro BIOS FD 2408/47, Frames 1-118.

Abstract available as PB 102161s. 2p. Mi $1.25, Ph $1.25.

RÜCKPRALLELASTIZITÄT UND IHRE BEDEUTUNG FÜR DIE PRÜFUNG UND BEURTEILUNG VON POLYMERISATEN (RESILIENCE AND ITS IMPORTANCE FOR THE TESTING AND EVALUATION OF POLYMERS), by Dr. Stöcklin. I. G. Farbenindustrie A. G., Leverkusen, Ger. Apr 1942. 26f photos, graphs, tables (Text in German) Mi $2.00, Enl Pr $5.00. PB 102154

1. Rubber - Elasticity - Germany 2. Polymers - Testing - Germany 3. KAUTEKO (Anwendungstechnische Kommission für Kautschuk) 4. Micro BIOS FD 1441/48, Frames 1-24.

Abstract available as PB 102154s. 1p. Mi $1.25, Ph $1.25. Paper presented at 8th meeting of Kauteko.

SAURE POLYMERISATION VON BUNA SS (ACID POLYMERIZATION OF BUNA SS), by Dr. Dennstedt. I. G. Farbenindustrie A. G., Leverkusen, Ger. Jun 1940. 8f photo, table (Text in German) Mi $1.25, Enl Pr $2.50. PB 102216

1. Buna SS (Trade name) 2. Rubber, Buna - Polymerization - Germany 3. KAUTEKO (Anwendungstechnische Kommission für Kautschuk) 4. Micro BIOS FD 1316/48, Frames 1-7.

Abstract available as PB 102216s. 1p. Mi $1.25, Ph $1.25. Paper presented to Scientific Rubber Conference Jun 8, 1940.

STATISTICAL RETURNS, TEST REPORTS, ETC., ON POLYSTYRENE EF. I. G. Farbenindustrie A. G., Schkopau, Ger. 1940-1945. 147f tables (Text in German) Mi $5.75, Enl Pr $20.00. PB 102151

1. Polystyrene EF (Trade name) 2. Polystyrene - Tests - Germany 3. Micro BIOS FD 2553/47, Frames 1-145.

Abstract available as PB 102151s. 1p. Mi $1.25, Ph $1.25.

TEST LABORATORY. MONTHLY REPORTS 1940-1944 AND LIST OF RESEARCH REPORTS 1941-1944. I. G. Farbenindustrie A. G., Schkopau, Ger. 1940-1945. 231f (Text in German) Mi $8.25, Enl Pr $31.25. PB 102159

1. Research - Germany 2. Rubber, Synthetic - Tests - Germany 3. Plasticizers - Tests - Germany 4. Micro BIOS FD 2350/47, Frames 1-229.

Abstract available as PB 102159s. 2p. Mi $1.25, Ph $1.25.

TESTING OF POLYSTYRENE EF, SN, BF. I. G. Farbenindustrie A. G., Schkopau, Ger. 1937-1943. 24f tables (Text in German) Mi $2.00, Enl Pr $5.00. PB 102149

1. Polystyrene - Tests - Germany 2. Polystyrene EF (Trade name) 3. Polystyrene SN (Trade name) 4. Polystyrene BF (Trade name) 5. Micro BIOS FD 2555/47, Frames 1-23.

Abstract available as PB 102149s. 1p. Mi $1.25, Ph $1.25.

TESTS OF POLYSTYRENE EF. I. G. Farbenindustrie A. G., Schkopau, Ger. 1941-1945. 133f graphs, tables (Text in German) Mi $5.50, Enl Pr $18.75. PB 102150

1. Polystyrene EF (Trade name) 2. Polystyrene - Tests - Germany 3. Micro BIOS FD 2554/47, Frames 1-131.

Abstract available as PB 102150s. 1p. Mi $1.25, Ph $1.25.

ÜBER DIE POLYMERISATION STARK GEREGELTER PRODUKTE (POLYMERIZATION OF STRONGLY REGULATED PRODUCTS), by Dr. Wolz. I. G. Farbenindustrie A. G., Leverkusen, Ger. Jul 1944. 11f graphs, tables (Text in German) Mi $1.75, Enl Pr $3.75. PB 102220

1. Polymerization - Regulators - Germany 2. Rubber, Buna - Polymerization - Germany 3. Buna SW 30 (Trade name) 4. Perbunan W (Trade name) 5. KAUTEKO (Anwendungstechnische Kommission für Kautschuk) 6. Micro BIOS FD 1399/48, Frames 1-9.

Abstract available as PB 102220s. 2p. Mi $1.25, Ph $1.25. Paper presented to Scientific Rubber Conference Jul 31, 1944.

ÜBER DIE UNTERSUCHUNGEN EINIGER KALTEESTER-LEUNA ALS WEICHMACHER FÜR IGELIT PCU (ON THE TESTING OF SOME LOW TEMPERATURE ESTERS AS PLASTICIZERS FOR IGELIT PCU), by Dr. Karl Löffler. I. G. Farbenindustrie A. G., Schkopau, Ger. Dec 1942. 8f (Text in German) Mi $1.25, Enl Pr $2.50. PB 102160

1. Igelit PCU (Trade name) 2. E515 (Plasticizer) 3. E426 (Plasticizer) 4. Rubber, Synthetic - Plasticizers - Germany 5. Micro BIOS FD 2314/47, Frames 1-7.

Abstract available as PB 102160s. 1p. Mi $1.25, Ph $1.25.

UEBER POLYMERISATIONSBESCHLEUNIGUNG (POLYMERIZATION ACCELERATION), by Kern. I. G. Farbenindustrie A. G., Höchst, Ger. Jul 1944. 36f graphs, tables (Text in German) Mi $2.25, Enl Pr $6.25. PB 102222

1. Polymerization - Acceleration - Germany 2. KAUTEKO (Anwendungstechnische Kommission für Kautschuk) 3. Micro BIOS FD 1410/48, Frames 1-34.

Abstract available as PB 102222s. 2p. Mi $1.25, Ph $1.25. Paper submitted to Scientific Rubber Conference on July 31, 1944.

ÜBER POLYMERISATIONSREGELUNG UND VERSUCHE MIT NEUEN REGLERN (REGULATION OF THE POLYMERIZATION PROCESS AND EXPERIMENTS WITH NEW REGULATORS), by Dr. Graulich. I. G. Farbenindustrie A. G., Leverkusen, Ger. Feb 1943. 9f (Text in German) Mi $1.25, Enl Pr $2.50. PB 102218

1. Polymerization - Germany 2. Rubber - Polymerization - Germany 3. KAUTEKO (Anwendungstechnische Kommission für Kautschuk) 4. Micro BIOS FD 1373/48, Frames 1-7.

Abstract available as PB 102218s. 2p. Mi $1.25, Ph $1.25. Paper presented to Scientific Rubber Conference, Feb 11, 1943.

STRUCTURAL ENGINEERING

CONCRETE KERBS, CAUSES AND PREVENTION OF FAILURES, by J. A. Loe. Gt. Brit. Dept. of Scientific and Industrial Research. Building Research Station, Watford, England. 1950. 25p photos, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.25. PB 102017

1. Curbs, Concrete - Gt. Brit. 2. DSIR RR TP 18. S.O. Code no. 47-110-18.

CONDENSATION PROBLEMS IN BUILDINGS. Gt. Brit. Dept. of Scientific and Industrial Research. Building Research Station, Watford, England. Oct 1950. 6p diagrs Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.05. PB 102331

1. Buildings - Drying - Gt. Brit. 2. Moisture - Condensation - Gt. Brit. 3. DSIR BRD 23. S.O. Code no. 72-22-23.

EFFECT OF CELL SHAPE ON COMPRESSIVE STRENGTH OF HEXAGONAL HONEYCOMB STRUCTURES, by L. A. Ringelstetter, A. W. Voss and C.B. Norris. U. S. National Advisory Committee for Aeronautics. Dec 1950. 9p drawing, graph, tables Mi $1.25, Ph $1.25. PB 102350

Tests were conducted on hexagonal honeycomb structures of untreated 50-pound kraft paper to determine the effect of the shape of the cells on the compressive strength of the structure parallel to the flute direction. From results of these tests, a family of curves was obtained by means of which it is possible to estimate the specific compressive strength of such honeycomb structures within the range of the test data. NACA TN 2243.

CARE AND MAINTENANCE OF FITTINGS AND EQUIPMENT IN THE MODERN HOUSE. Gt. Brit. Central Housing Advisory Committee. Sub-Committee on the Care and Maintenance of Internal Fittings and Equipment. Apr 1950. 58p Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.40. PB 102326

1. Building fittings - Maintenance and repair - Gt. Brit. 2. Furniture - Maintenance and repair - Gt. Brit.

R. Coppock, Chairman. S.O. Code no. 32-407.

FLOOR FINISHES FOR HOUSES AND OTHER NON-INDUSTRIAL BUILDINGS, by H. M. Llewellyn and F. C. Harper. Gt. Brit. Dept. of Scientific and Industrial Research. Building Research Station, Watford, England. Jul 1950. 29p fold. table Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.30. PB 102329

1. Floors - Materials - Gt. Brit. 2. DSIR NB B11. S.O. Code no. 47-549-11.

TRANSPORTATION EQUIPMENT

Aeronautics

Aircraft

APPROXIMATE METHOD FOR THE DETERMINATION OF THE INCREASE OF MAXIMUM LIFT ON THIN PROFILES DUE TO TRAILING EDGE FLAPS, by H. O. Palme and S. Stark. Sweden. Kungl. Tekniska Högskolan, Institutionen för Flygteknik. Apr 1948. 9p diagrs, graphs Mi $1.25, Ph $1.25. PB 102039

In the case of thin aerofoils at maximum lift it can be assumed that the forward stagnation point takes up a limiting aft position on the lower surface of the aerofoil and that this limiting position is not altered by the deflection of a flap at the trailing edge of the aerofoil. This assumption is the basis of an approximate method for the determination of the maximum lift of thin aerofoils with trailing edge flaps. The method is derived from a knowledge of the maximum lift without a flap and from the change of no lift angle due to the flap deflection. Cover date is 1950. KTH AERO TN 18.

CALCULATION OF DOWNWASH BEHIND SUPERSONIC WINGS WITH AN APPLICATION TO TRIANGULAR PLAN FORMS, by Harvard Lomax, Loma Sluder and Max Heaslet. U. S. National Advisory Committee for Aeronautics. 1950. 22p diagrs, graphs Available from Supt. of Documents, U. S. Government Printing Office, Washington 25, D. C. $.20. PB 101983

A method is developed consistent with the assumptions of small perturbation theory which provides a means of determining the downwash behind a wing in supersonic flow for a known load distribution. The analysis is based upon the use of supersonic doublets which are distributed over the plan form and wake of the wing in a manner determined from the wing loading. NACA Report 957.

DYNAMIC LATERAL CONTROL CHARACTERISTICS OF AIRPLANE MODELS HAVING UNSWEPT WINGS WITH ROUND-AND SHARP-LEADING-EDGE SECTIONS, by James L. Hassell and Charles V. Bennett. U. S. National Advisory Committee for Aeronautics. Nov 1950. 25p photos, drawings, graphs, tables Mi $2.00, Ph $3.75. PB 102281

A flight investigation has been conducted for the purpose of comparing the dynamic lateral control characteristics of airplane models with round- and sharp-leading-edge wing sections. The two dynamic models used in the investigation had different mass characteristics. One model was representative of a present-day fighter airplane with respect to inertia; the other was representative of a possible future type having very high fuselage inertia. These models could be equipped with either a 12-percent-thick biconvex section wing or an NACA 0012 wing having the same unswept plan forms. The results of the investigation include motion-picture records. NACA TN 2219.

EFFECT OF GEOMETRIC DIHEDRAL ON LOW-SPEED STATIC STABILITY CHARACTERISTICS OF A 40° SWEPT-BACK WING, by K. Orlik-Rückemann. Sweden. Kungl. Tekniska Högskolan. Institutionen för Flygteknik. May 1949. 18p drawings, graphs Mi $1.75, Ph $2.50. PB 102040

Six component force and moment measurements at low speeds have been made to investigate the effect of geometric dihedral on the aerodynamic characteristics of a 40° swept-back wing of aspect ratio 4,5 and taper ratio 0.5. The results of the tests indicate that at small ($\angle 10^{\circ}$) angles of attack and dihedral the effective-dihedral parameter, C_{l_β}, varies linearly with both geometric dihedral and lift coefficient. Explanation of the variation of moment coefficients with angle of attack is given using the results of a flow investigation. The report contains 18 pages with 16 figures. Cover date is 1950. KTH AERO TN 17.

EVALUATION OF THE C-82 AIRPLANE AS A POTENTIAL ASSAULT AND ARCTIC RESCUE AIRPLANE, by Robert L. King. U. S. Air Materiel Command. Engineering Division. Aero-Medical Laboratory, Wright Field, Dayton, Ohio. Oct 1950. 9p fold tables Mi $1.25, Ph $1.25. PB 102012

1. C-82 (Airplane) 2. Airplanes, Cargo - Aerodynamics 3. Aircraft, Rescue - Aerodynamics 4. Fairchild Aviation Corporation, Jamaica, N. Y. 5. AAF TSEAA MR 660-109-1.

INVESTIGATION OF A SYSTEMATIC GROUP OF NACA 1-SERIES COWLINGS WITH AND WITHOUT SPINNERS, by Mark R. Nichols and Arvid L. Keith, Jr. U. S. National Advisory Committee for Aeronautics. Feb 1948. 103p photos, drawings, graphs, tables Available from Supt. of Documents, U. S. Government Printing Office, Washington 25, D. C. $.55. PB 102354

The effects of location and shape of the spinner, shape of the inner surface of the cowling lip, and operation of a propeller having approximately oval shanks were investigated briefly. In addition, a study was conducted to determine the correct procedure for extrapolating design conditions determined from the low-speed test data to the design conditions at the actual flight Mach number. The design conditions for the NACA 1-series cowlings and cowling-spinner combinations are presented in the form of charts from which, for wide ranges of spinner proportions and rates of internal flow, cowlings with near-maximum pressure recovery can be selected for critical Mach numbers ranging from 0.70 to about 0.85. Cover date is 1949. NACA Report 950.

INVESTIGATION OF AIR LOADS IN FLIGHT FROM MEASUREMENTS OF STRAIN IN THE STRUCTURE, by J. Taylor. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Nov 1945. 4p diagrs Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.30. PB 102114

Strain measurements in flight involve considerably more work than on ground tests and should be restricted to problems which cannot be solved by ground tests. Limited experience available suggests that for most flight work the overall bending and shear actions at each of about five sections of a major component are all that is required. These can be de-

termined by suitable selection of positions of gauges, with no more than four to eight measuring stations at each section. It is advisable to check any particular installation by ground tests using known loads. Cover date is 1950. S. O. Code no. 23-2408. ARC RM 2408.

RELATION BETWEEN INFLAMMABLES AND IGNITION SOURCES IN AIRCRAFT ENVIRONMENTS, by Wilfred E. Scull. U. S. National Advisory Committee for Aeronautics. Dec 1950. 128p graphs, tables Mi $5.00, Ph $16.25. PB 102348

Data, which are applicable to the problem of aircraft fire hazards, were obtained from a literature survey and analyzed and discussed. Data pertaining to the ignition characteristics of inflammables ignited under various experimental conditions by heated surfaces, electric sparks and arcs and flames or hot gases are presented. Possible remedial measures, indicated by the survey to be capable of reducing aircraft fire hazards, are discussed. NACA TN 2227.

STUDY ON THE EFFICIENCY OF AIRCRAFT INSIGNIA AND AIRCRAFT MARKINGS, by Siegfried J. Gerathewohl and Heinz Haber. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. Aug 1950. 38p drawings, tables Mi $2.25, Ph $5.00. PB 102251

1. Aircraft - Identification systems.

THEORETICAL INVESTIGATION INTO THE EFFECT OF PROFILE SHAPE ON THE PERFORMANCE OF AEROFOILS IN CASCADE, by A.D.S. Carter and Hazel P. Hughes. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Mar 1946. 39p diagrs, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $1.60. PB 102112

The design of axial-flow compressors and turbines is based on the two-dimensional performance of cascades of aerofoils, but very little information is available at present on the effect of profile shape on the performance of such cascades. A limited theoretical investigation has therefore been carried out in order to determine in what direction further test work on this subject could most profitably be conducted. Several conclusions, which may prove a useful guide in this connection, are reached on the relative performance of various aerofoils. In addition a deviation rule is given for parabolic-arc cambered aerofoils, the use of which is becoming more extensive. As a guide to computors, etc. a fully worked-out example in a form suitable for routine calculation is given in an Appendix. Cover date is 1950. S. O. Code no. 23-2384. ARC RM 2384.

USE OF SOURCE DISTRIBUTIONS FOR EVALUATING THEORETICAL AERODYNAMICS OF THIN FINITE WINGS AT SUPERSONIC SPEEDS, by John C. Evvard. U. S. National Advisory Committee for Aeronautics. 1950. 35p diagrs, graphs Available from Supt. of Documents, U. S. Government Printing Office, Washington 25, D. C. $.25. PB 101967

Included in the first part of this report are the derivatives of: (a) the linearized partial-differential equation for unsteady flow at a substantially constant Mach number; (b) the source-distribution solution for the perturbation-velocity potential that satisfies the boundary conditions of tangential flow at the surface and in the plane of the wing; and (c) the integral equation for determining the strength and the location of sources to describe the interaction effects (as represented by upwash) of the bottom and top wing surfaces through the region between the finite wing boundary and the foremost Mach wave. The second part of the report deals with steady-state thin-wing problems. The solution of the integral equation for upwash is velocity potential and loading for several families of curved plan boundary wings. The third part of the report approximates the integral equation for unsteady upwash and includes a solution of the approximate equation. Expressions are then derived to evaluate the load distributions for time-dependent finite-wing motions. NACA Report 951.

WIND-TUNNEL TESTS ON AN AIRCRAFT DESIGNED FOR SUPERSONIC SPEEDS. PART I: HIGH-SPEED WIND-TUNNEL TEST ON 1/6.15 - SCALE MODEL AIRCRAFT, BY S. P. HUTTON AND H. E. GAMBLE. PART II: NO. 2 11 1/2-FT. WIND-TUNNEL TESTS ON A 1/4-SCALE MODEL WING, by I. Levacic, W.S.D. Marshall and A. D. Young. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Jul 1945. 28p graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $1.25. PB 102320

This report combines the results of tests made in two different wind tunnels at the Royal Aircraft Establishment, Farnborough, on an aircraft designed for supersonic speeds. Part I. Describes high-speed and high Reynolds-number tests made to check the stability at high speeds, and the low-speed landing condition respectively. Part II. Describes low-speed tests made on the wing alone in order to check scale effect on lift and drag, and for comparison with previous low-speed tests on a complete model. Cover date is 1950. ARC RM 2404.

Engines and Propellers

EFFECT OF ICE FORMATIONS ON PROPELLER PERFORMANCE, by Carr B. Neel, Jr., and Loren G. Bright. U. S. National Advisory Committee for Aeronautics. Oct 1950. 75p photos, graphs, tables Mi $3.50, Ph $10.00. PB 101981

Measurements made in natural icing conditions of propeller efficiency loss due to the accretion of ice on the blades are supplemented by an analysis to establish the magnitude of efficiency losses to be anticipated during flight in icing conditions. Agreement in the order of magnitude of efficiency losses to be expected is obtained between measured and analytical results. The results indicate that, in general, efficiency losses can be expected to be less than 10 percent; whereas maximum losses, which will be encountered only rarely, may be as high as 15 or 20 percent. NACA TN 2212.

GAS DYNAMIC THEORY OF THE RAMJET, by J. Reid with an addendum by P. J. Herbert. Gt. Brit. Ministry of Supply. Aeronautical Research Council. May 1946. 52p diagrs, graphs Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $2.00. PB 102322

The gas dynamic theory of the ramjet is developed and is applied to the calculation of performance of two ramjets. The first of these, called the "ideal" ramjet, is assumed to have no losses, aerodynamic or thermodynamic, and both diffusion and expansion processes are supposed to be insentropic. It provides a standard with which the second ramjet, called the "practical" ramjet, is compared. It is considered that the restrictions imposed on this latter are severe, and that the performance predicted for it could be obtained in practice without extensive research or development work. The calculations are carried out in each case as flight Mach numbers up to 3 and at values of the ratio of combustion temperature to atmospheric temperature up to 8. The performance date obtained are discussed in detail and the relevant conclusions drawn. Cover date is 1950. S.O. Code no. 23-2370. ARC RM 2370.

THEORY AND USE OF THE SUPERSONIC AIRSCREW, by W. F. Hilton. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Aug 1946. 10p diagrs, graphs Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.50. PB 102115

It is shown that an airscrew blade moving through the air with supersonic velocity at all radii may have an efficiency of the order of 70 per cent. over a wide range of operating conditions. The exact theory of the all-supersonic airscrew is developed for the case where the aircraft itself moves with supersonic velocity, causing the inflow factors to vanish. An inflow correction would have to be made in the usual way at subsonic forward speeds with supersonic rotational speed, but it is thought that this would be small in practice. An analytical expression for the performance of a supersonic airscrew is obtained by using Ackeret's linear aerofoil theory, which has no counterpart at subsonic speeds. The relevant parts of Ackeret's theory are given in the Appendix. In order to obtain an airscrew with supersonic resultant speeds even at the blade root it is essential to employ a larger spinner with a number of relatively short blades, and a somewhat higher rotational speed than is usual. The centrifugal forces on the blades should not be prohibitive. It is not obvious whether a compromise between all-subsonic and all-supersonic running would be better than the all-supersonic case examined in the present report. The proposals in this report open up the possibility of extending efficient airscrew propulsion into the transonic and supersonic range of aircraft speeds. Jet engines have come into prominence for high-speed aircraft more on account of loss of airscrew efficiency at high speeds than by virtue of an intrinsic efficiency of the jet. Even at a forward Mach number of 1.4 an airscrew efficiency of 68 per cent. can be obtained. Cover date is 1950. S.O. Code no. 23-2345. ARC RM 2345.

Aerodynamics

ANALYSIS OF THE APPLICATILITY OF THE HYPERSONIC SIMILARITY LAW TO THE STUDY OF FLOW ABOUT BODIES OF REVOLUTION AT ZERO ANGLE OF ATTACK, by Dorris M. Ehret, Vernon J. Rossow, and Victor I. Stevens. U. S. National Advisory Committee for Aeronautics. Dec 1950. 27p graphs, table Mi $2.00, Ph $3.75. PB 102491

By comparing pressure distributions obtained by the method of characteristics, the hypersonic similarity law is shown to be applicable over a wide range of Mach numbers and fineness ratios for bodies of revolution at zero angle of attack. The lower limits of Mach number and fineness ratio for which the law applies are indicated for cones and ogives. Charts are presented for rapid determination of pressure distribution on ogive cylinders for combinations of Mach number and fineness ratio within defined limits. NACA TN 2250.

APPLICATION OF GREEN'S THEOREM TO THE SOLUTION OF BOUNDARY-VALUE PROBLEMS IN LINEARIZED SUPERSONIC WING THEORY, by Max A. Heaslet and Harvard Lomax. U. S. National Advisory Committee for Aeronautics. 1950. 18p diagrs, graphs Available from Supt. of Documents, U. S. Government Printing Office, Washington 25, D. C. $.15. PB 101970

Following the introduction of the linearized partial differential equation for nonsteady three-dimensional compressible flow, general methods of solution are given for the two- and three-dimensional steady-state and two-dimensional unsteady-state equations. NACA Report 961.

AUSBREITUNG EINES HEISSLUFTSTRAHLES IN BEWEGTER LUFT. (DIFFUSION OF A HOT AIR JET IN AIR IN MOTION PART II: THE FLOW FIELD IN THE TRANSITION ZONE), by W. Szablewski. Sep 1946. 92p graphs Mi $4.25, Ph $12.50. PB 102349

A theoretical investigation was made of the flow field in the zone adjoining the jet core of an axially symmetrical hot air jet exhausting in air in motion. The decrease in the velocity and temperature along the jet axis, the breadth of the mixing region, and the asymptotic distribution functions were determined. Comparisons were made with available experimental data for both small and large temperature differences. Cover date is Dec 1950. NACA TM 1288.

COMPARISON OF THEORY AND EXPERIMENT FOR HIGH-SPEED FREE-MOLECULE FLOW, by Jackson R. Stalder, Glen Goodwin, and Marcus O. Creager. U. S. National Advisory Committee for Aeronautics. Dec 1950. 64p photos, drawings, graphs, tables Mi $3.00, Ph $8.75. PB 102492

A comparison is made of free-molecule-flow theory with the results of wind-tunnel tests performed to determine the drag and temperature-rise characteristics of a transverse circular cylinder. The measured values of the cylinder center-point temperature confirmed the salient point of the heat-transfer analysis which was the prediction that an insulated cylinder would attain a temperature higher than the stagnation temperature of the stream. Good agreement was obtained between the theoretical and the experimental values for the drag coefficient. NACA TN 2244.

CORRELATIONS OF HEAT-TRANSFER DATA AND OF FRICTION DATA FOR INTERRUPTED PLANE FINS STAGGERED IN SUCCESSIVE ROWS, by S. V. Manson. U. S. National Advisory Committee for Aeronautics. Dec 1950. 14p graphs, tables Mi $1.75, Ph $2.50. PB 102488

The heat-transfer data and the friction data from five reference reports on interrupted plane fins that are staggered in successive rows in the fluid-flow direction were separately correlated. A single heat-transfer correlation equation was obtained that satisfactorily represented the heat-transfer data over the entire range of conditions investigated. The friction data required separate correlation equations above the below the transition Reynolds number of 3500, based on fin-passage hydraulic diameter. The bulk of the friction data available satisfactorily correlated. NACA TN 2237.

GRAPHICAL METHOD FOR OBTAINING FLOW FIELD IN A TWO-DIMENSIONAL SUPERSONIC STREAM TO WHICH HEAT IS ADDED, by I. Irving Pinkel and John S. Serafini. U. S. National Advisory Committee for Aeronautics. Nov 1950. 67p drawings, graphs (part fold) Mi $3.00, Ph $8.75. PB 102280

A graphical method for obtaining the two-dimensional supersonic flow with moderate heat addition is presented. The basic equations were derived for flows in which the total temperature has a continuous variation with displacement in the direction of the flow. For flows at constant total temperatures before heat addition and with total temperature varying only in the direction of the streamlines, simplified forms of the basic equations were obtained from which working charts were plotted to facilitate construction of the flow. The charts cover the range of Mach number from 1.3 to 5.0. The application of the method and the charts are illustrated by a simple example. NACA TN 2206.

LINEARIZED COMPRESSIBLE-FLOW THEORY FOR SONIC FLIGHT SPEEDS, by Max A. Heaslet, Harvard Lomax and John R. Spreiter. U. S. National Advisory Committee for Aeronautics. Dec 1948. 19p drawings, graphs Available from Supt. of Documents, U. S. Government Printing Office, Washington 25, D. C. $.20. PB 102324

The partial differential equation for the perturbation velocity potential is examined for free-stream Mach numbers close to and equal to one. Several examples are solved including a three-dimensional swept-back wing and a two-dimensional harmonically oscillating wing, both for a free-stream Mach number equal to one. Momentum relations for the evaluation of wave and vortex drag are also discussed. Cover date is 1950. NACA Report 956.

NOTE ON FRAZER'S PROPOSED METHOD FOR THE NUMERICAL SOLUTION OF FLUTTER AND STABILITY PROBLEMS, by H. L. Price. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Aug 1944. 8p diagr Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.50. PB 102118

1. Mathematics, Applied - Aerodynamics - Gt. Brit. 2. Flutter - Calculations - Gt. Brit. 3. Stability - Calculations - Gt. Brit. 4. Blackburn Aircraft Ltd. 5. ARC RM 2393.

Cover date is 1950. S. O. Code no. 23-2393.

Land Transportation

DRAWINGS OF LIGHT CAR CHASSIS WITH THREE-CYLINDER TWO-STROKE ENGINE. PART I, REEL 2. Auto-Union A. G., Berlin. 1938-1941. 634f drawings (Legends in German) Mi $9.00, Enl Pr $83.75. PB 102271

For English abstract see PB 102270s. For other parts see PB 102270, 102272-102274.

DRAWINGS OF LIGHT CAR CHASSIS WITH THREE-CYLINDER TWO-STROKE ENGINE, PART II, REEL 1. Auto-Union A. G., Berlin. 1938-1941. 689f drawings (Legends in German) Mi $9.00, Enl Pr $90.00. PB 102272

1. Micro BIOS FD 5180/47, Frames 1-650.

English abstract included. For other parts see PB 102270-102271, 102273-102274.

DRAWINGS OF LIGHT CAR CHASSIS WITH THREE-CYLINDER TWO-STROKE ENGINE. PART II, REEL 1. Auto-Union A. G., Berlin. 1938-1941. 649f drawings (Legends in German) Mi $9.00, Enl Pr $85.00. PB 102273

1. Micro BIOS FD 5180/47, Frames 651-1300.

For other parts see PB 102270-102272, 102274.

DRAWINGS OF LIGHT CAR CHASSIS WITH THREE-CYLINDER TWO-STROKE ENGINE. PART II, REEL 2. Auto-Union A. G., Berlin. 1938-1941. 317f drawings (Legends in German) Mi $9.00, Enl Pr $42.50. PB 102274

1. Micro BIOS FD 5180/47, Frames 1301-1614.

For other parts see PB 102270-102273.

Marine Transportation

SYSTEMATIC TESTS WITH MODELS OF CARGO VESSELS WITH $\delta PP=0.575$, by H. F. Nordström. Sweden. Statens Skeppsprovningsanstalt, Gothenburg, Sweden. Apr 1950. 27p graphs, tables Mi $2.00, Ph $3.75. PB 101946

In two previous papers[1]) — for convenience referred to in the following as Publ. 10 and Publ. 14 — the author gave an account of some systematic tests with eleven models of fast cargo vessels with a block coefficient of 0.625. The present paper may be considered as dealing with a continuation of those earlier tests. Ten further models have now been tested, all with a block coefficient of 0.575. Resistance tests were carried out with all models and self-propulsion tests were also made with four of them. Meddelanden nr. 16.

MISCELLANEOUS

COAL FIELDS OF HOKKAIDO, JAPAN (OTHER THAN ISHIKARI), by John B. Lewis. Supreme Commander for the Allied Powers. Natural Resources Section. Aug 1950. 60p photos, maps, graphs, tables Mi $2.75, Ph $7.50. PB 102119

This report concludes a series of broad geological, geographical, and engineering studies which the Natural Resources Section has made of coal-producing areas in Japan. SCAP NRS 133.

EMERGENCY SURVIVAL EQUIPMENT, ALASKAN WET COLD FIELD TEST, by Norman K. Hanselman. U. S. Air Materiel Command, Wright Patterson Air Force Base, Dayton, Ohio. Jan 1950. 22p photos graph Mi $2.00, Ph $3.75. PB 101991

1. Survival equipment 2. Survival, Arctic 3. AAF TSEAA MR 670-20G.

HIGH-SPEED WRITING AND SELECTIVE ALTERING OF DIGITAL INFORMATION OF MAGNETIC SURFACES, by D. H. Toth. Engineering Research Associates, Inc., St. Paul, Minn. Sep 1950. 22p photos, diagrs Mi $2.00, Ph $3.75. PB 101985

Report covers an investigation of high-speed writing and selective altering of digital data on the magnetic surface of a rapidly rotating drum by utilizing hard vacuum tubes. Contract NObsr 42001.

RECONNAISSANCE SOIL SURVEY OF JAPAN: HIROSHIMA AREA, by William D. Lee. Supreme Commander for the Allied Powers. Natural Resources Section. Nov 1950. 72p maps (part fold), tables Mi $3.50, Ph $10.00. PB 102332

1. Soils - Japan 2. SCAP NRS 110E.

RECONNAISSANCE SOIL SURVEY OF JAPAN, KYOTO AREA, by Eugene P. Whiteside. Supreme Commander for the Allied Powers. Natural Resources Section. Jun 1950. 79p maps (5 fold col.), graphs, tables Mi $3.50, Ph $10.00 PB 102024

1. Soils - Surveys - Japan 2. SCAP NRS 110-C.

Color in maps will not reproduce.

REPORT OF THE FIRE RESEARCH BOARD WITH THE REPORT OF THE DIRECTOR OF FIRE RESEARCH FOR THE YEAR 1949. Gt. Brit. Fire Research Board. Feb 1950. 54p photos, drawings, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.45. PB 102417

1. Fire protection - Research - Gt. Brit. 2. Combustion - Research - Gt. Brit.

S. O. Code no. 47-151-0-49.

REPORT OF THE OUT-OF-STATE PURCHASES BY TEXAS ORGANIZATIONS, 1947, by Richard A. Downward, Guy Johnson, Jr., Donald K. Andrews. Texas. Engineering Experiment Station, College Station, Texas. Sep 1949. 31p map, graphs Available from Texas Engineering Experiment Station, College Station, Texas.

1. Purchasing - Texas 2. TU EES RR8.

REPORT OF THE OUT-OF-STATE PURCHASES BY TEXAS ORGANIZATIONS, 1949, by Guy Johnson, Jr., J. W. Coffin, William J. Crum. Texas. Engineering Experiment Station, College Station, College Station, Texas. Sep 1950. 24p tables Available from Texas Engineering Experiment Station, College, Texas. PB 102249

1. Purchasing - Texas 2. TU EES RR19.

SAFETY SHOULDER HARNESSES, TYPES G-1, G-2, AND G-3, by L. D. Thorlough Smith. U. S. Air Materiel Command. Engineering Division. Aero-Medical Laboratory, Wright Field, Dayton, Ohio. Aug 1950. 10p photos, tables Mi $1.25, Ph $1.25. PB 101995

1. G-1 (Shoulder harness) 2. G-2 (Shoulder harness) 3. G-3 (Shoulder harness) 4. Shoulder harness, Safety 5. AAF TSEAA MR 666-25B.

THERMAL CHARACTERISTICS OF QUARTERMASTER MOUNTAIN SLEEPING BAG, by Franz G. Rinecker. U. S. Air Materiel Command. Engineering Division. Aero-Medical Laboratory, Wright Field, Dayton, Ohio. Aug 1950. 4p table Mi $1.25, Ph $1.25. PB 101996

1. Sleeping bags - Thermal characteristics 2. AAF TSEAA MR 670-22K.

PATENTS

Chemicals and Allied Products

DRAFTS OF PATENT APPLICATIONS RELATING TO CATALYSTS, AROMATICS, ALCOHOLS, AND ALLIED PRODUCTS, PT. II. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. 1941-1945. 665f (Text in German) Mi $9.00, Enl Pr $87.50. PB 101921

1. Micro BIOS FD 1043/47, Frames 701-1360.

For Pt. I see PB 101920.

MANUFACTURE OF TRIMETHYLENE TRINITRAMINE. Westfälisch-Anhaltische Sprengstoff A. G., Reinsdorf, Ger. 1943-1945. 12f (Text in German) Mi $1.75, Enl Pr $3.75. PB 102365

1. Hexogen - Production - Patents - Germany 2. Patents - Germany - W 112826 IVc/12p Feb 16, 1945 3. Patents - Germany - W 113372 IVc/12p July 31, 1943 4. Micro BIOS FD 2410/46, Frames 1-10.

Abstract available as PB 102365s. 1p. Mi $1.25, Ph $1.25.

PATENT APPLICATIONS RELATING TO CONDENSATION PRODUCTS. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. 1940-1942. 17f (Text in German) Mi $1.75, Enl Pr $3.75. PB 102199

1. Condensation products - Patents - Germany 2. Patents - Germany O.Z. 12210 Jun 25, 1940 3. Patents - Germany O. Z. 12266 Jul 24, 1940 4. GP 647988 supplement 5. Micro BIOS FD 2821/48, Frames 1-14.

Abstract available as PB 102199s. 2p. Mi $1.25, Ph $1.25.

PATENT APPLICATIONS RELATING TO DEHYDROGENATION, CLEANSING AND SEPARATING PROCESSES. I. G. Farbenindustrie A. G., Ludwigshafen, Ger. 1940-1941. 17f (Text in German) Mi $1.75, Enl Pr $3.75. PB 102201

1. Hydrocarbons - Separation - Patents - Germany 2. Hydrocarbons - Dehydration - Patents - Germany 3. Gases - Fractionation - Germany 4. Ketones, Alicyclic - Preparation - Patents - Germany 5. Patents - Germany - O. Z. 12351 Sep 12, 1940 6. Patents - Germany - O. Z. 12389 Oct 10, 1940 7. Patents - Germany - O. Z. 12400 Oct 15, 1940 8. Patents - Germany - O. Z. 12613 Mar 4, 1941 9. Micro BIOS FD 2824/48, Frames 1-15.

Abstract available as PB 102201s. 2p. Mi $1.25, Ph $1.25.

Miscellaneous

LANDWIRTSCHAFT. KLASSE 45, 50, 66, 64. (AGRICULTURE) (VOL. 17 OF THE SERIES). Auszüge Deutscher patent-anmeldungen. n.d. 641p (Text in German) Mi $9.00, Ph $81.25. PB 99820

1. Agriculture - Patents - Germany 2. Agricultural machinery - Germany.